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VETERINARY MEDICINE

MAY 1946

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KANSAS CITY, MISSOURI

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Studies with ultramicroscope reveal that filterable viruses are crystallizable proteins.—*Sci. News Letter.*

Nitrofuran, 5-nitro-2-furaldehyde semicarbazone, has given good results in the army as an application for infected wounds, particularly those resulting from severe burns.

Graduate instruction in veterinary medicine to qualify veterinary graduates for assignments in veterinary research and in clinical specialties will be given at the new College of Veterinary Medicine, University of Illinois, when the school opens, presumably in the fall of 1947.

Zintel, *et al,* have found that the blood level of streptomycin following a single intravenous injection in man is better maintained than is the case with penicillin. Feldman and coworkers inoculated 25 guinea pigs with *Mycobacterium tuberculosis* 48 days before treatment with streptomycin. He had 24 controls. The treated animals received 6,000 units of streptomycin daily divided into four doses. When the experiment was terminated after 166 days of treatment 17 of the controls and two of the treated animals had died. The untreated controls showed severe, widely disseminated tuberculosis while the disease among treated guinea pigs was minimal—13 had no gross or microscopic lesions and nine of them gave a negative reaction to tuberculin. The drug has a low toxicity for guinea pigs even over a prolonged period. Streptothricin proved devoid of deterrent qualities in tests made.

Some dermatoses in calves are due to ascorbic acid deficiency.

The West Indian cherry *(Malpighia punctifolia)* contains a concentration of vitamin C, 34 times as great as that of oranges. One cherry (2.5gms) supplies four times the daily requirement of vitamin C for a person.

The weakest link in establishing research centers for fur farmers is lack of veterinarians trained to work with fur-animal diseases. The Fromm laboratory has offered to give special training to veterinarians in their methods of diagnosis and treatment.—*Am. Fur Breeder.*

The greatest difficulty confronting livestock sanitary authorities in deciding whether to employ the culture-serum treatment for the prevention of swine erysipelas in their respectives states is lack of information as to the incidence of the disease.—*B. H. Edgington, Ohio Agr. Exp. Sta.*

In certain general infections and in some contaminated wounds there is an agent that destroys penicillin. It is called penicillinase and has, so far, defied all attempts to isolate it. The organism or organisms which produce it are not known. Recent investigations at Columbia University, sponsored by the Office of Scientific Research, discovered that parachlorophenol, a crystalline substance, is a safe and strong disinfectant which acts effectively with penicillin, protecting it from the destructive action of penicillinase.

Correction

Line six on page 124 of the April issue of VETERINARY MEDICINE, referring to the administration of sodium fluoride for ascariasis in swine, should read: one part salt in 99 parts of feed instead of 10 parts of the salt. A concentration higher than 1% is unnecessary and concentrations higher than 2% cause emesis in swine. Refer to the April copy and make the correction *now*.

During 1945 poultry brought the highest price of record for any year except 1920.

A corpus luteum is essential to the development of the maternal placenta and therefore is necessary to pregnancy in all animals. It is not necessary during the latter half of pregnancy.

Second Refresher Course at Cornell

The New York State Veterinary College at Cornell University, Ithaca, N. Y., announces a second Post War Refresher Course of three weeks' duration, beginning June 3rd, 1946.

Veterinarians, who served in the Armed Forces during World War II and who are graduates of veterinary colleges approved by the American Veterinary Medical Association, are eligible. The membership in the course has been limited to 35. Due to the housing situation in Ithaca only those for whom furnished rooms can be supplied will be accepted. Apartments are not available.

Inquiries and applications should be addressed to Dr. Hadley C. Stephenson, Director of Refresher Courses, New York State Veterinary College, Cornell University, Ithaca, N. Y.

Hints for Practitioners

1. Obstreperous bulls and some cows may be difficult and sometimes dangerous to drench. An alternative is to insert a half-inch trocar and canula into the rumen and with a funnel pour the drench through the canula.

2. Dosing fowls *per os* by means of a syringe with a length of rubber tubing attached to the nozzle is time consuming. Injecting the medicament into the crop with a hypodermic syringe is far easier and much quicker.

3. Collecting blood for a smear by making an incision in the ear often requires a surprisingly deep cut. Locating an ear vein and pricking it with a pin is more satisfactory. The hemorrhage may be arrested, if necessary, by squeezing the puncture site between the thumb and finger.—From the *J. of the South African Vet. Med. Assn.*, 16:2. 1945.

Canine distemper with complicating encephaltis may simulate rabies clinically and morphologically.

When a dog is on the table for an operation and for any reason more anesthetic is required a sublinqual vein offers the most convenient site for injection of additional nembutal.—*Robert Nichols*, in *Quar. News*.

That spring bluegrass pasture saved 20% of an all mash ration of poultry while mature bluegrass did not influence consumption of mash, has been reported from the Kentucky Experiment Station.

WANTED

MAY, 1945, and FEBRUARY, 1946, issues of VETERINARY MEDICINE. Your subscription will be extended one month for each copy sent us.

May Lessen Dog Bathing

Three British scientists have determined as a result of a series of experiments that DDT incorporated in soap used for bathing dogs will destroy the fleas and lice with which the animals may be infested and prevent reinfestation for a period of many weeks. The shortest period of protection in a test of 12 long-haired dogs was nine weeks. This differs from experience in the use of DDT on cattle where the effect of the parasiticide was lost in about one week on animals exposed to brilliant sunlight.

Green Buckwheat Source of New Drug

It has been found by the U. S. Department of Agriculture that rutin, a new drug which is effective in the treatment of conditions arising from high blood pressure, can be obtained from green buckwheat.

Rutin has been produced from tobacco leaves but buckwheat yields from eight to 20 times as much rutin and at a fraction of the cost.

The Eastern Research laboratory of the department had searched for a plant containing rutin for two years before it was found so abundantly in buckwheat.

Since rutin is a glucoside it is thought it may have equal nutritional value and it may resemble the action of vitamin C in the growth and hardness of teeth and bones.

It is estimated that shortly over a million pounds of rutin will be needed annually. The estimated 1946 medicinal need for rutin is placed at 10,000 pounds.

Unlike most vitamins, most hormones are harmful in excessive doses.

* * * *

A substance called mycocidin extracted from a mold of the Aspergillaceae group completely checked the growth of *Mycobacterium tuberculosis* in glass tubes. The bacteria were from patients in advanced stages of tuberculosis and after exposure to the mycocidin injections of amounts which would have ordinarily been fatal to guinea pigs, left them well and at death no lesions of tuberculin were evident.

In this report from Hudson County (N. J.) Tuberculosis Hospital it is not claimed that myococidin is a cure for tuberculosis but further study of the new mold substance is being made along this line and the activity of mycocidin for other disease germs is being tested.

* * * *

Undulant Fever in Iowa

Human brucellosis has been observed in Iowa since 1927.[26] Until December, 1943, *Brucella abortus* and *Br. suis* were identified as the etiologic factors. In the past two years 25 cases of brucellosis in persons due to *Br. melitensis* have been recognized. A complete history was obtained on 20 of the cases. None had had any contact with goats, only five had recent contact with sheep, all had contact with hogs and 12 with cattle, or had drunk unpasteurized milk. On the basis of this and other data swine were incriminated as the major pool of *Br. melitensis* infection in Iowa.

Approximately half of the human brucellosis in Iowa is among farm residents—80% in males, 20% in females—indicating contact with animals as the principal source of infection.

Among urban residents 35% of the cases are in packinghouse workers. The remaining 65% is approximately equally divided between males and females probably indicating unpastuerized milk as a major etiologic factor.

Cases of brucellosis due to contact with animals and due to *Br. abortus* in unpasteurized milk are sporadic. When they are due to *Br. suis* in unpasteurized milk they are epidemic in character. The cases of *Br. melitensis* infection that have occurred to date in Iowa have been sporadic and widely scattered, indicating infection from contact with animals.

Surveys have shown that there are several cases of latent brucella infection for each clinical case in Iowa.

Brucellosis constitutes one of many valid reasons for pasteurizing all milk and other dairy products.

[26] From a discussion of the control and eradication of brucellosis in animals from the standpoint of human health, by Dr. Carl F. Jordan, Director, Division of Preventable Diseases, Iowa State Board of Health, Des Moines.

The average death loss of layers on poultry farms in 1945 was 17.7%. In 1944 it was 18.4% and in 1943, 16.2% the lowest on record.

* * * *

Screwworm Situation for 1946 Season

Screwworms won't cause much trouble to stockmen this coming season, according to the United States Department of Agriculture. At the present time, it appears as though screwworm areas may have the lightest year since 1939. Adverse weather conditions appear to have killed all overwintering screwworms from Texas to Florida.

* * * *

Velsicol 1068 a New Insecticide

A chlorinated hydrocarbon introduced under the trade name of velsicol 1068 is claimed to be even deadlier to some species of insects than DDT.

Tests indicate it is three to four times as toxic to house flies, twice as toxic to potato beetles and five to 10 times as toxic to grasshoppers as DDT. The residual effect is not so long lasting as is that of DDT, but lasts longer than gammexine, the new English insecticide.

* * * *

Degrees and the Code of Ethics

In scanning present-day veterinary literature one notes an almost universal employment of the D.V.M. degree, although many of these degrees date back to the first and second decades of the century when D.V.M. comprised a minority of veterinary degrees.

On this subject the code of ethics of the A.V.M.A. has this:

Paragraph 4.—No member shall use a college degree to which he is not entitled or (nor) any degree or title granted by an institution declared unworthy by contemporary institutions of its class.

* * * *

Army Examination of Dr. Robert Ley's Brain

The brain of Dr. Robert Ley, Nazi leader, which was shipped by air to the United States in November of last year for gross examination and microscopic study by Army pathologists shows "a long-standing degenerative process of the frontal lobes," Major General Norman T. Kirk, Surgeon General of the Army, has announced.

Degeneration in the brain of Doctor Ley, who hanged himself to avoid trial as a war criminal, was sufficient to account for the unusual behavior of the former German labor leader, according to the announcement.

Avian Pneumoencephalitis in the United States

Since 1935 a disease, at first popularly known as "chicken flu" or "nine day pneumonia," has been rather prevalent in commercial poultry flocks in California. The disease may have occurred earlier than 1935 and been unnoted because of its clinical similarity to other respiratory diseases of fowl.

The loss from this infection was not great enough to alarm owners, being principally temporarily retarded growth and, when it occurred in laying pullets, lessened egg production. The disease was regarded as probably distinct from infectious bronchitis and infectious laryngotracheitis because numerous attempts to convey it by inoculation and by exposure to naturally infected cases failed.

A type of nervous disorder which had not been seen previously occurred in many flocks of brooder chicks in one poultry district in 1940. Practically all outbreaks accompanied or followed a respiratory disease which was thought to be infectious bronchitis. Intensive studies of the disease in the laboratories of the University of California and the State Department of Agriculture determined (1941) that the respiratory and nervous symptoms were manifestations of a single disease entity. In 1942 it was discovered to be due to a virus that had not previously been reported in this country. Avian pneumoencephalitis was the name proposed by the discoverer (Dr. J. R. Beach) for the new disease.

Avian pneumoencephalitis was not regarded as a serious menace to the poultry industry until 1943, when as a result of experiments conducted at the University of California it was shown to be immunologically related to Newcastle disease (Britain) or Raniket (India), a serious plague of poultry in many parts of the world, but not occurring in the United States.

Clinically pneumoencephalitis bears little resemblance to Raniket or Newcastle disease, as it occurs in other parts of the world, but the fact that it is related to it in anyway is a matter for serious concern. Viruses have a way of becoming suddenly highly pathogenic and relation to a virus inducing such a high mortality and possessing the capacity of such rapid extension as the virus of Raniket is reason enough for pursuing further investigation of it vigorously.

In the spring and summer of 1945 this disease was recognized in New Jersey (Beaudette), New York, Massachusetts and Connecticut, where however, it occurred in a mild form—seldom exhibiting the nervous symptoms characteristic of the more severe outbreaks. The extent of the infection may be much wider than the known occurrence on the West Coast and on the East Coast (where it is called Newcastle disease). Natural infection of pneumoencephalitis in poultry is difficult to recognize clinically since (1) the respiratory symptoms closely resemble those of other diseases — infectious bronchitis, infectious laryngotracheitis and the "common cold," (2) in the majority of outbreaks only a few, or possibly none, of the affected birds, exhibit the nervous symptoms, which clinically are the most characteristic symptoms of the disease and (3) the lesions in birds dead of the disease are rarely of definite, diagnostic significance.

Because of the difficulty of recognizing the disease clinically, it is usually necessary to rely upon laboratory tests—inoculation of 11-day chick embryos—for a definite diagnosis of avian pneumoencephalitis. Since the mortality is seldom significant, neither the poultry raiser nor his veterinarian is likely to be alarmed by an outbreak and laboratory study of outbreaks are unlikely to be made, except the possibility of the presence of pneumoencephalitis is realized.

The United States Livestock Sanitary Association has recommended (1945) that a nation-wide survey be made to determine if avian pneumoencephalitis be present in areas other than those in which it has already been identified. The suggestion is made, by the Director of the California State Department of Agriculture, that blood samples collected under the pullorum disease program of the National Poultry Improvement plan be utilized for this purpose after they have served the function for which they are collected. The plan seems feasible and early action upon it appears highly desirable.

Nutrition Requirements Variable

When we speak of a diet being inadequate we imply that it is insufficient to supply the demands of the particular animal under the circumstances of the moment. The nutritional requirements of the animal vary greatly with both intrinsic and extrinsic conditions. For instance, pregnancy, lactation and growth greatly increase the demands for food, as do also cold, exposure and exercise. It will be realized that the dietary needs of livestock on the high-veld in winter will be greatly increased by the last named factors, at a time when the food supply is at its lowest.—Richard Clark in *J. So. African Vet. Med. Ass'n*, 15:2, 1944.

Buy Savings Bonds—to have and to hold

Veterinary Corps Develops a New Rinderpest Vaccine

Throughout the War, biological warfare was one of the hush hush subjects, as secret as radar or the atomic bomb and for a considerably longer period. Information on research in biological warfare directed against military and civilian personnel and field crops was released but a month ago. Only now has there been released a record of research to protect animals from foreign plagues that might be introduced into this country intentionally or accidentally.[1]

Throughout historical times rinderpest has been the captain of animal plagues. For a thousand years preceding World War I, it ravished the herds of Europe, during or after each major war; completely destroying the cattle industry of many countries. This happened to Italy and to Egypt as recently as 100 years ago. Rinderpest has been responsible for many famines in India and China, which have cost the lives of millions of persons. Rinderpest destroys not only an important source of food but also the work oxen and water buffalo without which the inhabitants cannot produce rice or other field crops. Following the revolution of 1917 the Soviet experienced a devastating outbreak of rinderpest that contributed much to the terrible famine which followed. At the close of the World War I the disease was present in Belgium.

There were no means of combatting the spread of rinderpest except quarantine, which is quite ineffective, prior to 1896, when virus-serum simultaneous injection was shown to have a very limited value. Boynton, about 25 years later, developed in the Philippines the first tissue vaccine. Kelser, a few years subsequently, developed an improved tissue vaccine. This vaccine, the production of which was later improved and the cost lowered by Rodier, enabled the veterinary service to eradicate the disease from the Philippine Islands. In India various antirinderpest vaccines have been used; the most recent being one made from goats' blood. It has mitigated the losses in that country but has not effected progress in eradication of the disease.

Early in 1942, the great hindrance to the war effort that an outbreak of rinderpest in the United States or Canada would constitute, was the subject of consideration by a joint U. S.-Canadian commission composed of Dr. J. Craigie, University of Toronto; Dr. R. E. Dyer, Director of the U. S. National Institute of Health; Dr. E. B. Fred, President University of Wisconsin; Brig. Gen. R. A. Kelser, U. S. Army Veterinary Corps; Dr. C. A. Mitchell, Canadian Ministry of Agriculture; Prof. E. D. G. Murray, McGill University and Dr. Harry W. Schoening, U. S. Department of Agriculture.

This committee decided to attempt to produce rinderpest vaccine from virus propagated in chick embryos. A laboratory was set up on Grosse Isle in the lower St. Lawrence River. The isolation of this island, the site of a former quarantine station, minimized the chances of accidental escape of the virus to the herds of the continent. Six officers of the U. S. Army veterinary corps, one from the Medical Corps of the U. S. Navy and two scientists from Canada, together with a corps of technicians, were assigned the mission of preparing the vaccine. This was accomplished in little more than a year.

The great advantage of chick embryos over large mammals as a source of the vaccine are obvious—unlimited material at low expense, a wholly laboratory procedure minimizing chances of accidental escape of the virus and an improved product.

Quantities of the vaccine were prepared at Grosse Isle—ready for any need that might eventuate. Fortunately the vaccine was not needed during the war, but now a use for it has arisen. A million doses have been given to UNRRA for use in combatting the widespread outbreaks of rinderpest in China, which are hampering food production and intensifying the famine in that land.

Rinderpest is, at least, as old as history in India, China and other parts of Asia. This new chick embryo propagated vaccine will make its speedy eradication possible in all countries having a good veterinary service. The efficient veterinary service of the U.S.S.R. may be expected to eliminate soon this costliest of animal plagues from all Russian soil. The excellent veterinary service traditional in the Union of South Africa, into which rinderpest was introduced a half century ago, may be expected to finally eradicate the disease from that country even though some of the wild animals constitute reservoirs of the infection there.

Whether China and India get rid of rinderpest as a result of this wartime development of a better agent for combatting it, will depend upon whether they develop a competent veterinary service, adequate in personnel to

[1] *Science News Letter*, Mar. 16, 1946.

control the diseases of their domestic animals. Old as those countries are, their governments have not yet learned what western nations have long known—no country can have a successful animal industry without the control of animal disease, and no country can control disease among its animals without a good veterinary service.

Disease Eradication and Veterinary Service

Veterinarians, particularly those engaged in official disease control projects, are apt to inflate the advantages of eradication of the spectacular livestock plagues. Agricultural writers habitually do so and state or infer animal husbandry's dependence upon veterinary service is lessened by the elimination of the worst of the epizootics. This is probably due to the paucity or absence of veterinary vital statistics, but it doesn't take much investigation to show that when a spectacular disease is suppressed, more insiduous diseases move into the hiatus and the toll continues much as before if veterinary service be neglected. More of the net reduction in livestock losses that has been brought about in the past generation has been due to better nutrition and management than to the suppression of sheep scab, bovine tuberculosis and glanders.

This is not an argument for relaxation in the efforts to eradicate our indigenous animal plagues nor for lowering the bars to the introduction of exotic diseases, capable of wreaking even greater havoc. Each plague provides its own, unanswerable arguments for eradication or interdiction.

It was common, in the early days of the cattle tick eradication program, to state that tick fever cost the cattle industry 100 million dollars annually. The toll of bovine tuberculosis was placed at the same convenient amount. Without hog-cholera antiserum and virus and the vaccines the price of hog cholera would hardly be less. These sums were sheerest guesses but it is unlikely that they were too high. Widely disseminated contagious pleuropneumonia would exact a price probably as high. Unrestrained foot-and-mouth disease, it is estimated, would occasion direct and indirect losses of half a billion dollars yearly and rinderpest, it is said, would exact a toll four times as great. One might continue with surra, infectious lymphangitis, trypanosomiases and piroplasmoses more deadly than tick fever and easily prove that but for the suppression or barring of plagues we should have no livestock industry at all. Yet other countries have these plagues and at the same time maintain important livestock industries. India for example, has all of them and a cattle industry three times as large as our own. It is not as prosperous, but neither are other Indian industries, whether agricultural or manufacturing, mining or transportation, as prosperous as the same industries in this country.

There is competition among diseases, a struggle for existence not only with the host but with other disease. Obviously, the hog that dies of cholera will not later suffer from enteritis, but if cholera is prevented it may do so. The owner of a cow whose udder is ruined by tuberculosis infection will not later be concerned about an invasion of the *Streptococcus agalactiae*. When there is no tuberculosis in the herd, then the Streptococcus invasion becomes important.

At the height of the bovine tuberculosis eradication it was common to hear veterinarians, engaged in that work, say the elimination of tuberculosis from a dairy herd eliminated just about all of the udder troubles, reduced bloat and other digestive ailments and even lessened untoward post-parturient developments. They felt certain that dairy practice would be just about over when bovine tuberculosis departed. The present incidence of mastitis is the answer to that and similar predictions. Some 30 years ago, one of the midwestern experiment stations stated in a farmer bulletin, "if a hog is sick, he has cholera." The statement was an exaggeration even at that time. It would be preposterous now.

Neither the eradication nor the control of livestock diseases in this country has lessened the need for veterinary service. At present we are assured the bill for the support of the progeny of the heelfly is 50 million dollars annually and of the various bot-fly larvae probably not less. The depredations of intestinal helminths of animals defies computation in the absence of more data than we now possess as to prevalence and distribution.

The annual toll of brucellosis and mastitis is put at the old familiar sum of 100 million dollars each, the same figure released by the suppression of bovine tuberculosis and tick fever. And when all of these ailments of our domestic animals are conquered, there will still remain the respiratory infections and non-specific diseases of the digestive organs, the traumatisms, distocias and breeding failures; the enteritides of swine and coccidiosis of poultry and calves, nutritional ailments and piroplasmoses, canine distemper, fox encephalitis and pullorum disease with anthrax, blackleg, swine erysipelas, encephalomyelitis and various other infectious and non-infectious diseases awaiting only an opportunity to destroy the wealth of the livestock raiser, and

an important food supply of the nation. The sulfonamides, penicillin, phenothiazine and DDT have not lessened the need of the livestock industry for veterinary service. They have only made it more valuable to livestock owners and to the nation.

The major livestock plagues were never important sources of income to practitioners. They impoverished many a farmer but never enriched any veterinarian engaged in general practice. More often than not the farmer who lost a herd of hogs from cholera didn't pay the bill for veterinary service for his other animals till the next year, if ever. The mine-run of miscellaneous maladies and prosperous livestock owners, not the sweeping plagues, will always be the underpinning of the substantial veterinary practice.

Veterinary Secretariat for the Far East

An international veterinary conference was convened by UNRRA in Sidney, Australia, in December to consider problems incident to the shipment of livestock into liberated countries of the Far East for purposes of rehabilitation.

The conference was attended by representatives of Australia, China, India, Netherlands Indies, New Zealand, Philippines and the United States, and the commands of General MacArthur and Admiral Lord Louis Montbatten.

The most important decision reached at the conference was to establish an International Veterinary and Livestock Secretariat for the Far East.

The Secretariat will collect and disseminate information relating to the incidence and control of animal disease in the member countries; the adoption of uniform methods of health certification, will provide an information service on animal husbandry problems, encourage the interchange of veterinary personnel for post-graduate training and supply veterinary aid to member countries in case of emergency.

It is expected the Secretariat will become a branch of the UNO and be continued.

Major William Granger, an Australian veterinarian, was appointed Executive Officer of the Secretariat. The United States representative is Dr. H. E. Furgeson, formerly of Bozeman, Mont. Col. R. T. Seymour, V.C., is the representative of General MacArthur's Command. Drs. Vincente Ferriols, ISC '12, and Pedro Sales represent the Commonwealth of the Philippines. Dr. C. C. Chen, formerly of Washington, D. C., is the representative of the Republic of China.

Veterinary Corps Officers Separated Since VE-Day

(Supplement to lists previously published)

Alabama

Thornton, Grover

Arizona

King, Jack A. Olvey, Frank H.

Arkansas

Morton, John Denman

California

Cranfield, John Glynn Pike, Burton Francis
Hauge, Ronald T. Townsend, Jay G.
Perry, John Kolb Williams, George A.
McCormick, Edmund B.

Colorado

Jackson, Irvin Monell Miller, George G., Jr.

Florida

Martin, Walter D., Jr.

Georgia

Border, Chas. Richard Dixon, Albert Vernon
Brock, Jesse C. Lanham, Thomas Edgar

Illinois

Anderson, Everett T. Harriman, Henry E.
Moody, Robert Albert

Indiana

Jackson, Woodrow W.

Iowa

Brenny, Raymond N. Hanna, Charles G.
Clements, James H. Knoop, Francis W.
Dykstra, Clarence F. Moon, Eugene E.

Kansas

Dedrick, Warren James Kitselman, Charles H.
Knox, James William

Kentucky

Metcalfe, Elmer Lewis Pass, Albin George

Louisiana

McCurdy, Jon A. Schofield, Wm. Carver

Michigan

Stephenson, Dale R.

Minnesota

Maher, Martin Patrick Wanner, Kasper Wm.

Mississippi

Horne, Charles Henry

Missouri

Bennett, Ralph W. Maxwell, Ralph A.
Clark, Robert Hugh Meisels, Morton
Cleveland, H. J. Milici, Rosario F.
Ebert, Edgar Frazier Peck, James Eugene
Fagan, Raymond Sussman, Oscar
Gouge, Hardin Edward Thomson, Frederic B.
Hoy, Lyman Lester Verslius, Hendrik
Jennings, Louis White, Wilbur W.
Krukowski, Stanley M. Woodhouse, Clarence A.

Montana

Au, Robert J.

Nebraska

Spratt, Earl Keith

Ohio

Burriss, Kenneth K. Dorgan, William F.
McClarren, Richard M.

Oklahoma

Fisher, LeRoy T. Moe, Lewis H.
Zedlitz, Alfred C.

Pennsylvania

Cooper, Harold Y. Jones, Russell C., Jr.
Evans, Samuel Kolson, Morton
Lerch, Robert J.

Rhode Island

Armstrong, James Wm.

Texas

Christian, Paul Lichnovsky, Joseph F.
Davis, Richard H., Jr. Mills, Harold B.
Horning, J. Gilbert Ozier, Terry Sam
Roberson, Billie C.

Virginia

Cooper, Harold Keim

Washington

Mendenhall, Wm. I. Menig, Bert Albert
Todd, Lewis K.

Address Unknown

Scott, Rolland O.

The Highest Priced Bull

Pittodori Upright is the name of a shorthorn bull imported from Aberdeenshire, Scotland, by Sni-a-Bar farm near Kansas City, Mo. The purchase price was $61,335, the highest ever paid for a bull. The previous record price was $57,000 and was for a Hereford.

The Examination of Meat and Meat Products

The Committee on the Microbiological Examination of Foods of the American Public Health Association (*Am. J. Pub. Hlth.*, Aug. 1945, pp. 829-836), gives tentative methods for the examination of meat and meat products that the meat inspector of the present time may question the prospect of ever attaining the maximum objective of his art by such means. There are economic as well as scientific considerations involved, all the way from the living animal to the kitchen stove. The article gives directions for the collection, transportation, storage, and preparation for microbiological examination of all types of meats and meat products—fresh, uncured meat (beef, pork, veal, lamb, etc.), ham (sweet-pickled and smoked), bacon and sausage, jellied meat products and dried meats together with the media needed to carry out a classical investigation of the salubrity of these components of the human dietary. But, where, when, by whom and at whose expense this inspection of the food supply will be made is not clear. In short, is microbiological examination of all meat and meat products a practical procedure in modern life? This is not to question the value of what such examinations reveal. The article concedes that the flora of foods is not static. There is admitted to be a great difference between meat of the careful, and that of the careless, handler. Two tragedies were traced to the hands of housewives who prepared the sandwiches for church parties—too late for meat inspection to prevent. So, the testing of meats and meat products *en route* is not an insurance of purity at the time of eating. In the case of prandial catastrophes, due to individual accidents or to the output of the large abattoirs, the importance of microbiological investigation is not in dispute. However, the desideratum is an economic and workable *modus operandi* for the bulk of meat and milk products which a population of human omnivores eat every day. Clean abattoirs everywhere (not only in big cities), the slaughtering of animals "without blemish," close inspection of viscera by experts at slaughter, refrigeration and sanitary handling are so manifestly incomplete in our present set-up that interjecting painstaking, time-consuming, and expensive microbiological examinations seems to be working on effect and forgetting the cause.

The striking success of health agencies in supplying the public with potable water from a polluted source has warped the judgment of many of their personnel. Cleaned milk is by no means the same as clean milk and a microbiological examination is not the best or in any sense a practical means of detecting the surreptitious introduction of a diseased animal into the meat supply, nor for locating a filthy slaughterhouse.

It is well to emphasize that there are big, basic gaps in general meat inspection to be filled before building up the impression that public health is being protected *en masse* by classical bacteriological methods. The veterinary service, in its efforts to install more widely, even the rudiments of a meat inspection for *all* the people, needs and solicits the aid of the American Association of Public Health. That achieved, it can then follow through with the more refined details.

As it looks from here, the combined influence of the federal, state, county and municipal public health agencies will have to be mobilized to help the veterinary service inaugurate a local meat inspection program for the American people comparable to what it has maintained for a half century on the national level. The alternative is to diddle and hope. And, lest we be misunderstood by the livestock farmers for whom we also labor, be it said we know of nothing that would be more helpful to them than stamping their food products with an authentic brand of purity.

In meat inspection, as in surgery, most of the infections are primary.

Animal Experimentation Essential to Medical Program

Studies using animals are absolutely necessary to determine the potency of drugs used to save lives. The standardization of insulin, of diphtheria antitoxin, of the drugs used for the heart and to relieve pain depends on the use of frogs, cats, guinea pigs and dogs. Pituitary extract which has saved millions of hours of suffering for women in childbirth must be tested on the organs of guinea pigs or cats to determine its power to produce its definite effect. Even ergot, known for centuries to be of value in aiding the control of hemorrhage after the birth of a child, is also thoroughly tested on animals before it is sold for use on human beings. The use of smallpox vaccine, which has stamped out smallpox from most of the civilized world, is dependent on the utilization of the calf and the pig.

Shall the poisonous doses of potent drugs be learned by tests made on the white rat or the guinea pig or on man? Shall we permit men and women and children to die or suffer unnecessary mutilation to spare the feelings of the white mouse? During the war even the prisoners in our penitentiaries volunteered to be infected with malaria so that the most efficient drugs for the control of the disease in our soldiers and sailors could be developed. Is there any reason why the dog should not serve equally with the courageous boys and girls of our colleges who volunteer often for the type of study that is necessary in making progress against disease?

People with logical minds often wonder why such arguments to justify animal experimentation are necessary. The average sensible American businessman or farmer and the average intelligent woman are likely to feel that we are agitating a cause in which the side of reason is so obvious that continued discussion is a waste of effort, but there is a reason which in itself indicates the lack of logic that prevails in some aspects of our civilization. Misguided people of great wealth who are more inspired by sentiment than by sense have bequeathed vast sums of money in trust to promote continuous opposition to experiments on animals.

The executive secretaries who hold what seem to be life-time jobs as the directors of these trusts revive and stimulate the opposition year after year and the money that supports them keeps coming from these bequests and trust funds. As a part of their effort they get legislators searching for any kind of publicity, to introduce their bills and to defend them before the state legislators and the Congress with floods of crocodile tears. Year after year the same little lobbies pop up to put pressure on these legislators. Year after year the university presidents, professors, physicians and representatives of industries who are vitally affected must be mobilized in opposition to this deluge of misguided sentiment. Year after year chemists, biologists, sociologists and statesmen have to give freely of their time and their funds to meet the attacks of these antisocial propagandists.

Science is the hope of the future for the progress of humanity. The scientists have themselves established regulations to control experimentation on animals which assure the most careful consideration in undertaking necessary studies. They deserve our confidence and our support.—*Morris Fishbein in Hygeia.*

New Anesthetic for Horses

Millenbruck and Wallinga, veterinary officers at Fort Riley, Kansas recommend *(J.A. V.M.A.,* Mch., '46) the addition of pentobarbital sodium to the chloral hydrate-magnesium sulfate anesthetic commonly used in equine practice.

Advantages claimed for the new combination are:

1. No initial period of excitement.
2. No floundering during recovery from the anesthetic.
3. The recovery period is shortened as compared with recovery after chloral anesthesia.
4. The margin of safety is high.

The procedure comprises the addition of 30gm of chloral hydrate, 15gm of magnesium sulfate and 6.5gm of pentobarbital sodium to 1000cc of distilled water and the intravenous injection of all that the animal can take before going down. This solution undergoes a chemical change within an hour and must be used only when freshly made.

The average requirement for surgical anesthesia in a 1000-pound horse was found to be two-thirds of the solution prepared as above or 20gm chloral hydrate, 10gm magnesium sulfate and 67 grains of pentobarbital sodium. A dose 100% greater than the average was toxic but not fatal when used experimentally. More than double the average dose caused death of the animal to which it was given experimentally.

While the first three advantages may be questioned, since the same results can be attained by the skilled employment of chloral hydrate-magnesium sulfate anesthesia, the safety factor claimed for the new combination would seem to make it an important addition to the anesthetics available for solipeds and possibly for cattle also, amply justifying its somewhat greater cost.

European Experiences in the Army Veterinary Corps

By E. T. ANDERSON
Kewanee, Illinois

MY EXPERIENCES in the Army Veterinary Service in Europe were with the 9th Air Force in England, Wales, France, Belgium, Luxemburg, Holland, Germany, Czechoslovakia, Austria, Italy, Sardinia, Corsica, Sicily, Switzerland and Monaco. Coördination work was done with the 7th, 3rd, and 1st armies. During the last phase of European war we interrogated German veterinary personnel.

On the organization of the veterinary service of an Air Force it may be said: Each Air Force had a Veterinary detachment with 10 sections, one for each 25,000 troops. Each section comprised one veterinary officer and two enlisted personnel. It operated as an independent organization having its own transportation, tentage and administrative equipment and was therefore very mobile. Many times we were alerted, packed, loaded with office and personal equipment and ready to go in 20 minutes.

The Veterinary Detachment with the 9th Air Force was first stationed in England and later moved onto the continent in Normandy with combat personnel. It was charged with the veterinary service for all air force units on the continent. During the last phases of the war we had units inspecting for the air force from France to Czechoslovakia and from Denmark to Switzerland. The road mileage was almost twice the direct distance, due to the many detours necessary where bridges were missing or roads bombed out.

Thus a great deal of traveling was required. I traveled approximately 74,000 miles on official business in about two years: 54,000 miles by jeep, command car and civilian car; 10 000 miles by air; 6,000 miles by ship and 4,000 miles by railroad, including "40 and 8" cars. Road and rail travel were very slow, therefore most of our time was spent on the road. Long trips were made by plane or jeep.

Veterinary service consisted of food inspection, chemical warfare, food conservation, rodent control, food-borne and animal to man diseases, food poisoning, veterinary care of guard dogs, reports and special projects. Our objects were: Protection of the health of the troops and conservation of the financial interests of the Government in the matter of food supplies.

Food inspection consisted of inspecting food supplies at Army Air Force distribution points, including handling, storage and transporting methods. Although Army Regulations provide that veterinarians are responsible for the inspection of foods of animal origin only, the Air Force policy was to have veterinarians inspect all food for sanitation and soundness. Food obtained from local sources also was inspected by the veterinary service. Most of this type of procurement was by the American Red Cross for use in aero clubs at air fields. Such food was purchased only from sources inspected by, and approved upon the recommendations of the attending veterinarian. During 1944 the veterinary service of the 9th AF inspected 399,-396,036 pounds and rejected 21,000 pounds of food. These weights include only food of animal origin.

We made recommendations for the protection of food supplies at the AAF installations against chemical warfare attack and were prepared to supervise decontamination of food supplies after such an attack or after accidental contamination. We were thankful that this did not become necessary.

Food conservation consisted of advising local commanders on rotation of food supplies in storage to forestall spoilage, and the dispersal of emergency rations to render them less vulnerable to attack.

Rodent control consisted of advice as to measures for their control with special emphasis on methods of eliminating such pests from food storage areas.

We advised station surgeons on the prevention of food-borne diseases, and diseases of animals transmissible to man. This included making recommendations for the control of local purchases of unauthorized food products; recommending methods for the control of stray animals; advising as to measures to be taken upon the occurrence locally of such diseases as rabies, foot-and-mouth disease, etc.; and vaccination of pets against rabies. Only one soldier in the 9th AF required the Pasteur treatment. Prompt and successful quarantine measures were enforced in the area involved.

We were called in for investigation of food poisoning outbreaks. This function consisted of tracing foods incriminated in food poisoning and recommendation of measures to prevent its recurrence.

Guard dogs were used by the AF in guarding isolated planes, ammunition dumps and gaso-

*Presented at the 64th annual meeting of the Illinois Veterinary Medical Association, Springfield, Jan. 17 and 18, 1946.

line. Each dog was assigned and trained and was familiar with only one guard. They were very treacherous. Treatment was difficult as guard dog teams moved frequently, attending veterinarians were changed depending on the location of the teams, and correct feeding was almost impossible. Doberman pinchers, Alsatians and pit bulls were the breeds of dogs used. They did a good job when used properly, i.e., at night and in isolated areas where few persons passed to leave their scents.

I was fortunate after leaving the trail of General Patton and his 3rd Army to be closely associated with the 7th Army which had a large number of mules used as pack animals. The Veterinarians with those outfits deserve far more credit than they have received for the work they did under adverse conditions.

We had an opportunity to become acquainted with veterinarians in all the countries in which we traveled, but had insufficient time and understanding of their languages to learn much about their methods of practice. Wherever we went practitioners were having difficulties because of lack of transportation and communication facilities and on account of inflation and depletion of supplies except in England where veterinarians used cars and seemed to have sufficient gasoline for their practices. Communication there was satisfactory except in and around large industrial areas where the Germans bombed and sent over buzz bombs. Their supplies seemed adequate in most instances.

In other countries the principal mode of transportation for veterinarians was the bicycle. When the Germans were retreating fast and their gasoline supply was almost gone, the soldiers took any type of transportation available and abandoned their motorized equipment. In many instances veterinarians lost their transportation in this way. Some used saddle horses, others horse carts.

Communications for civilians on the continent was practically non-existent. Farmers would drive into the village with loaded carts pulled by one horse, a horse and an ox, two oxen, two milk cows or as many as eight horses. In France the animals were always hitched in tandem. These outfits were often seen in front of a veterinarian's office or in his yard.

Inflation was well under way in all the German occupied countries when we arrived. Horses sold for $4.00 to $6.00 a pound; hogs $3.00 to $7.00 per pound; eggs 15 to 20 cents apiece and butter $7.00 per pound, while a good meal in a civilian restaurant in Paris cost $15 to $25. Drugs and supplies of all kinds were very scarce.

Communicable diseases encountered included: anthrax, rabies, foot-and-mouth disease, brucellosis, tuberculosis, piroplasmosis, hog cholera, swine erysipelas, glanders, equine epizootic lymphangitis and infectious anemia.

Some biological and pharmaceutical products were furnished the various countries by the United States Government, especially in cases where epizootics threatened. This work of disease control was directed by veterinarians in U. S. Military Government, who investigated the disease outbreaks and obtained supplies on Lend-Lease.

Anthrax occurred around several ports where large numbers of hides were handled.

Foot-and-mouth disease outbreaks occurred in England and on the continent. So far as I know only strict quarantine and slaughter were used in England to control the disease. A vaccine was used on the continent with encouraging results.

Reactors to brucellosis in herds that were tested ranged from 40 to 80%. Not much testing was done.

Tuberculosis ranged from 25 to 60% in the cattle. The old style subcutaneous test for tuberculosis, discarded in this country 25 years ago, was used instead of the intradermal test.

Piroplasmosis in Italy, Sicily, and southern France was effectively treated with acaprin—a product manufactured by the I. G. Farbenindustrie in Germany.

Crystal violet hog cholera vaccine was distributed in some instances by the U. S. Military Government veterinarians for the prevention of hog cholera.

Swine erysipelas culture and serum vaccination was used effectively in non-infected herds in Italy.

The subcutaneous test was the only one employed in Europe for the detection of glanders. The Germans reported that they had no glanders in the army but that the Russians had a great deal of trouble from it. There was no routine testing for glanders in the German army after the Allied invasion in Normandy. When asked why there had been no testing, they said that they had to move so fast they had no time for it.

Equine epizootic lymphangitis and infectious anemia were prevalent in Italy.

During the last two months of the European War, I spent my time tracing down and interrogating German veterinary personnel. We spent most of our time with advanced combat units in order to get onto air fields and to prisoners of war as soon as possible after they were taken. We did this in order to get all the information possible on their organization, food inspection, care and treatment of horses and any general information we could obtain.

The organization of the Veterinary Corps in the German Army provided for distribution of veterinary personnel to much lower levels than in our Army.

Food inspection-slaughter trains in the German Army slaughtered animals as the armies moved. This was a very good plan and was excellent for the morale. After the Normandy invasion and our rapid advances these teams were kept busy staying out of direct gun fire. Animals were obtained chiefly in the occupied countries on requisition and were slaughtered as needed. Compare this with the fact that all of our food was sent over from the United States and kept improving as the war went on. Fresh frozen boneless beef and pork were on our menus two or three times a week, except at the very front during combat. The Germans reported that the food production of France was almost doubled during the German three-and-one-half years of occupation. The French had nothing to say on this subject except that they (the French) had much less than before. Holland and Denmark were large producers of meat and dairy foods for the Germans. The slaughter houses in German occupied countries were all supplied with German veterinary inspectors. The German meat inspection service was very complete, superior to any other food inspection service that we saw in other countries. At one air field near Nuernberg, Germany, we found cooked rabbit still hot in the huge kettles ready to be served. It was good. At this same field we found facilities for keeping approximately 2,000 Angora rabbits.

The instruments supplied to the German Veterinary Corps were far superior to those we had. Their supply of these instruments was plentiful. In one salt mine, 1025 feet below the surface, we saw enough veterinary instruments for every veterinarian in the state of Illinois. A common statement made by the Germans on interrogations was, "We had plenty of everything, but we didn't have time to use it. You came in too fast. Every time we moved you fired on or strafed us day and night. How did you get all that stuff over here so fast and where did you get so much so quickly."

The Germans used a large number of horses in their armies. These horses were from Russia, Italy, France, Belgium and Holland. In the invasion of France in 1940 the Germans used 790,000 horses and mules. None of the veterinary personnel we interrogated knew how many horses they had at the end of the war. After the break through at Saint-Lo, France, we saw miles of dead horses and abandoned horse drawn equipment in the ditches, with dead men who had been caught on the road and strafed by our planes. We saw scenes similar to this across Germany into Czechoslovakia and Austria. We met many Russians, but did not know whether or not any of them were veterinarians due to vodka and language difficulties.

I did not contact a civilian veterinarian or a foreign army veterinarian in Europe, who had used the sulfonamides or penicillin in his practice.

In conclusion I'm glad it's over and it's good to be back.

My personal feeling is that I could have done more for the war effort had I remained in practice. The experience was worth a million, but I would not accept a million to go through it again.

* * * *

The U. S. Department of Agriculture estimates the value of phenothiazine to the livestock industry to exceed 10 million dollars annually.

* * * *

The avian leucosis complex has been the cause of greater loss in dollars and cents to the poultry raiser during the past 15 years than has any other single disease.

* * * *

Sodium Fluoride Effective Against Swine Roundworms

The most efficient drug for use against ascarids in swine has been found to be sodium fluoride, the U. S. Department of Agriculture reports. The treatment may be expected to eliminate about 95% of these worms — the commonest and most injurious parasites of swine. Other known drugs are only about 50 to 75% effective.

Though sodium fluoride is an active poison, commonly used against household insects and other pests, it has proved to be safe for pigs in the small quantities necessary for the removal of ascarids. Under experimental conditions, the best treatment consisted in feeding pigs for one day on dry ground feed containing 1% by weight of sodium fluoride. This small quantity of drug in the feed affords some natural protection, both because of self-limited intake and because of the vomiting that tends to follow occasional overeating.

If the animals that require treatment are not accustomed to dry ground feed, it is best to give them nonmedicated feed for a day or two before dosing. Groups of from two to 30 animals have been treated successfully, but it is better to treat in groups not larger than 10. The use of sodium fluoride is advised by the Department's scientists only as an adjunct to sound measures of prevention and control, such as the use of the McLean County system.

Report of the Chief of the B.A.I. for 1945

IT SEEMS that no matter how many of the annual reports of the Chief of the Bureau of Animal Industry, United States Department of Agriculture, one has read, each new report, on arrival, astonishes one by the number, variety, complexity and, more than all else, the magnitude and importance of the tasks discharged by the Bureau. These reports are available from the Superintendent of Documents, Washington, D. C., for 15 cents and the veterinarian who fails to procure them as issued and retain a file of them neglects a source of scientific, professional and general information that he can ill afford to be without.

Research by the Bureau during the past year included studies in the breeding and feeding of farm animals, processing and storing their products, investigating their diseases and developing and testing remedies and prophylactic agents for the ailments of livestock.

Regulatory duties included supervision of the production of sera, vaccines, viruses, aggressins, bacterins, toxoids, diagnostic agents and antitoxins for use on animals and tests of these products for purity and potency. They included, also, the inspection of biological products imported for use in veterinary practice; the inspection of imported animals and animal products to prevent the introduction of exotic diseases, the regulation of the shipment of animals in interstate commerce and through public stockyards and the maintenance of quarantines against animals infested with fever ticks and scab parasites. The Bureau is also charged with the certification for export of animals and biological products for use on animals.

Disease control activities included the federal-state projects for the eradication of tick fever, bovine tuberculosis, dourine, pullorum disease and bovine brucellosis, with educational and advisory duties in connection with the suppression, control or mitigation of hog cholera, swine erysipelas, avian tuberculosis and Johne's disease.

Beef Production.—In a study of more efficient beef production through the testing of progeny to identify the best sires, production increased, in one exceptional case, as much as 22% in a single generation. The second-generation offspring fattened quickly and put on gains of about two pounds a day with very moderate feed consumption.

Breeding. — Sheep-breeding research disclosed attractive opportunities for flock improvement through careful selection of breeding stock. Inheritance of such desirable characteristics as good weaning weight in lambs and length of wool was found to be fairly high.

Horse Feeding.—Horse-feeding experiments showed that satisfactory rations can be made from mixtures of roughage and concentrate feeds compressed into pellets or cakes. The principal feeds used in this manner were alfalfa or timothy hay, oats, beet pulp, and a binder such as corn dextrin. The purpose of this research was to determine the practicability of reducing bulk to meet the needs of Army and other horses used in areas where feed is scarce.

Better Grazing.—Cattle-grazing studies in the Southwest showed that mowing the sagebrush in June doubled beef production per acre over that on unmowed acres.

Research on animal disease included a study of most of the more important diseases. Developments of special interest were:

Hog Cholera.—In a test crystal-violet-glycerol vaccine gave a slightly better immunity to hog cholera than crystal-violet-phosphate vaccine.

Crystal-violet-glycerol vaccine is made by adding one part of crystal-violet and 50 parts of glycerol to 2000 parts of virus blood and incubating at 37.5° C. (99.5° F.) for two weeks. In a test the freshly made vaccine was held at refrigerator temperature for 6½ months and at that time was avirulent.

In a continuing experiment crystal-violet vaccine was used on 5,099 hogs in 244 herds . . . "in properly selected herds the swine were adequately protected."

In an experiment to determine the virus content of blood at various stages of hog cholera, a virus content equivalent to one million lethal doses per cubic centimeter was found, repeatedly, on the sixth to eighth day after inoculation. In one experiment a virus content equivalent to 2½ million lethal doses per cc was found and in another one five-millionth of a cc of virus proved fatal to a susceptible pig.

Twenty-eight veterinarians assigned to hog cholera control in 24 states made 40,000 farm inspections and nearly 2000 autopsies.

Bovine Brucellosis.—Two groups of heifers, one born of dams infected with *Brucella abortus* and the other from healthy dams were vaccinated with strain 19. In the first group the titers averaged 1:300; in the second group 1:800. In blood tests four months later all calves (21) from infected dams were negative; while 61% of the calves from healthy cows showed average titers of 1:200.

In a comparison of subcutaneous and intradermal injections of strain 19 vaccine there was no significant difference in the reaction titer or its duration. The duration of the immunity resulting from each method will be determined later.

Swine Brucellosis.—Of 38 sows artificially exposed to *Brucella suis,* 10 (26.3%) continued to eliminate the organisms for periods up to six months.

On the basis of present experience it is believed that most of the Brucella abortions in swine are due to vaginal infection from the boar.

Hormones in Sterility.—In a group of 59 sterile cows which were given 104 hormone treatments 60% conceived.

Mastitis.—Of 39 infected quarters treated once with 50,000 units of penicillin per quarter, 24 were freed of infection. "Penicillin cannot be expected to be a panacea in this disease, nor will it replace the need for application of hygienic measures in milking operations and the prevention of spread of infection."

Pullorum Disease and Fowl Typhoid.—"Since *Shigella gallinarum* and *Salmonella pullorum* both cross agglutinate with blood or serum of either typhoid or pullorum infected birds, it is evident that fowl typhoid complicates greatly the pullorum disease eradication program."

Swine Erysipelas. — Twenty-two thousand herds containing one and one-half million swine were vaccinated on an experimental basis by the culture-serum simultaneous method with "very satisfactory results."

Swine Ascariasis.—Oil of chenopodium removes 75% of the large roundworms from swine, but is toxic and difficult to administer. Phenothiazine removes 50% of these worms and is easy to administer, but is scarcely less toxic than oil of chenopodium. Sodium fluoride removes an average of 89% of the ascarids, is clinically nontoxic in therapeutic doses (1% of the feed for one day) and is easy to administer.

Dourine — Glanders. — Only one center of *Trypanosoma equiperdum* infection remains in the United States. It is on the Pagago Indian Reservation in Arizona.

No cases of glanders were found in this country during the year.

Export of Animals.—Animals inspected for export numbered 86,206. Supervision was exercised over the equipment of vessels carrying export animals to assure space and fittings necessary for their humane treatment and safe transportation.

Interstate Transportation.—More than 26 million cattle, 27 million sheep and 28 million swine were inspected for interstate shipment at 48 stockyards in 46 cities. Of these animals, 3112 cattle and 167,148 sheep were dipped for scabies and 274,312 swine were immunized against hog cholera.

Serum-Virus Control.—The manufacture of nearly 1,190,000,000cc of hog cholera antiserum was supervised and the product tested before sale. Hog cholera virus production totaling 312,325,000cc and other veterinary biological agents in lesser amounts were supervised or the products tested for purity and potency.

Nutrition Notes

A satisfactory silage for wintering beef and dual-purpose cattle or for milk production can be made from surplus potatoes and low quality grass hay in the proportion of 85% potatoes and 15% hay.

In the southeastern states where other suitable carbohydrate feeds are limited, sweet potato meal is a satisfactory feed for fattening beef cattle. It should be supplemented with cottonseed meal (one part in six) and peanut vine "hay."

In a test at the Coastal Plains experiment station, bonemeal proved somewhat superior to defluorinated fused phosphate as a source of phosphorus for cattle. Feeding bonemeal in self-feeders also proved superior to supplying disodium phosphate in the drinking water.

It is estimated that 75 million pigs, the number raised in this country in an average year require 4,760,000 tons of protein feed for good development. This quantity is far in excess of the amount fed to swine. It appears considerable saving in corn and other grains could be effected if more high-protein feeds were used in swine feeding and more pork would be produced.

Pigs receiving a diet deficient in nicotinic acid, manifested deficiency symptoms consisting of impaired appetite, diarrhea and retarded growth. Pigs on a nicotinic acid deficient diet and litter mates on the same ration plus 5mg of nicotinic acid per day per kilogram live weight when exposed to infection with *Salmonella cholerasuis* gave a high incidence of necrotic enteritis in the former and a low incidence of the disease in the latter.

Soybean meal as the sole protein in a ration for laying hens is satisfactory, but when more than 10% of the ration consisted of soybean meal the hatchability of the eggs was lowered, as was also the viability of the chicks hatched from their eggs and the rate of growth of those that survived.

Effects of Chorionic Gonadotropin on Cystic Ovaries in the Cow

By G. R. MOORE*
Manhattan, Kansas

THAT the anterior pituitary body is important in the development and regulation of the genital system was demonstrated by Smith and Engle[3, 4] in 1927. Ascheim and Zondek[1] in the same year, working independently, confirmed the work of Smith and Engle in all important details. These authors concluded that the anterior pituitary supplies an extragonadal hormone which is directly responsible for the growth and function of the gonads and acts through them on the secondary genitalia.

Cole and Hart,[2] three years later, demonstrated that a gonad-stimulating factor, similar in its results to that of the anterior pituitary, is present in the blood serum of pregnant mares in great abundance. They were able to produce the same results with moderate injections of pregnant mare's serum as did Smith and Engle with anterior pituitary extract. They showed that this product originates in the placenta and applied the name chorionic gonadotropin to it. Numerous workers have extracted chorionic gonadotropin in pure crystalline form and it is now on the market under a variety of trade names.

Materials and Methods

In this study 18 dairy cows were encountered in the course of routine sterility work that exhibited various degrees of nymphomania due to cystic ovaries. All were treated by the intravenous administration of 1000 I.U. of chorionic gonadotropin in aqueous solution. The results of treatment were determined by (1) rectal examination in from 10 to 30 days following treatment, (2) the observed sexual behavior of the animal, as reported by the caretaker and (3) the results of subsequent breeding.

The duration of nymphomania was determined from the history as revealed by the herd records or the recollections of the caretakers. The range was from seven days to six months with an approximate average of 30 days for the entire group.

Cows in which the condition was not improved by the first treatment, and those in which a relapse occurred, received a second injection of gonadotropin and one cow received a third treatment.

Results

Of the 18 cows in the experiment, 12 ceased to show nymphomania in from three to 11 days following the first injection and in 10 of these the presence of corpora lutea in the ovaries was verified by rectal examination. The other two relapsed into nymphomania again, one in 18 and the other in 34 days following treatment. These two cows and the six that showed no response to treatment were given a second injection. In this group of eight, seven made complete recoveries and experienced normal estrus cycles after treatment. One cow failed to respond to the second treatment and a third injection was given. She continued to show pronounced nymphomania throughout the period of observation and after various other therapeutic measures were tried without success, was finally discarded as incurably sterile.

Of the 17 cows treated once or twice, 12 were known to have conceived following treatment. The results are summarized in Table I.

TABLE I. RESULTS OF TREATMENT OF 18 CASES OF CYSTIC OVARIES WITH CHORIONIC GONADOTROPIN.

	Injection		
Cows:	1st	2nd	3rd
Receiving the injection	18	8	1
Recovering at least temporarily	12	7	0
Relapsed after recovery	2	0	0
Corpora lutea found within 30 days after treatment	10	7	0
Normal cycles since treatment	10	7	0
Known to have conceived following treatment	8	4	0

Discussion

Since all animals in this study were clinical cases, it was not possible to use control animals. It is known that many untreated cases of nymphomania eventually recover spontaneously. However, authentic data that could be used as a basis for comparison are lacking in the literature. Therefore, it is difficult to evaluate properly the results of the treatment.

Of the 18 cows, 12 (67%) showed improvement within 11 days following a single injection. This same group of cows had shown nymphomania for periods of from one week to six months previous to treatment. The recovery rate of 67% from a single injection in the short period of less than 11 days, irrespective of the duration of the malady, strongly supports the contention that recovery was a result of treatment and not spontaneous.

Chorionic gonadotropin, extracted from the blood serum of pregnant mares, has placed in the hands of the veterinarian a gonadotropic substance that is marketed at a price that makes its use advisable in those conditions in which it has known value. It would seem from

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a study of the above data that the treatment of cystic ovaries in dairy cattle is an affection where the product could be used to economic advantage.

Reliable statistics on the value of manual rupture of the cysts are not available, but in the experience of the author and his colleagues this method of treatment has not been successful.

Conclusion

1. It was concluded as a result of the above study that chorionic gonadotropin is a valuable treatment in nymphomania due to cystic ovaries in the dairy cow.

Summary

A group of 18 dairy cows was treated for cystic ovaries with chorionic gonadotropin. Twelve (67%) showed improvement within 11 days following a single treatment with two animals relapsing. Eight were treated a second time with seven recoveries. One cow was treated a third time without success. Of the 18 cows, 17 experienced normal cycles following the first or second treatment and 12 are known to have conceived.

References

1. Asheim, S., and Zondek, B., *Arch. F. Gynikel*, 130:1, 1927. Abst. by Cole, H. H., *Am. J. Physiol.*, 93:57. 1930.

2. Cole, H. H., and Hart, G. H., The potency of blood serum in progressive stages of pregnancy in effecting the sexual maturity of the immature rat, *Am. J. Physiol.*, 93:57, p. 68. 1930.

3. Engle, E. T., Pregnancy following superovulation in the mouse, Proc. Soc. Exp. Biol. and Med., 25:2, pp. 64-85. 1927.

4. Smith, P. E., and Engle, E. T., Experimental evidence regarding the role of the anterior pituitary in the development and regulation of the genital system, *Am. J. Anat.*, 40, pp. 159-217. 1927.

Treatment of Mange and Scabies

Recent reports of the highly successful use of benzyl benzoate in sarcoptic mange in dogs[1, 2] and also in the treatment of demodectic mange in that animal[3] lend interest to the following account of use of this agent in the treatment of scabies by the Medical Department of the Army:

Benzyl Benzoate Treatment of Scabies

In a staging area station hospital, from June 1942 to December 1944, the number of cases of scabies hospitalized and treated with 15% precipitated sulfur ointment was 723. With this treatment, the man-days lost amounted to more than 2000, and the time lost due to disruption in unit processing was incalculable.

On 1 December 1944 when a 23% alcoholic solution of benzyl benzoate was obtained, a series of 67 cases was hospitalized, treated as described below, and carefully watched for at least 72 hours. Sixty-five of these cases were completely cleared of all signs and symptoms on discharge from the hospital. Following this series, all scabetics were treated on an ambulatory status. In the nine months since then, 1266 cases were treated with a saving of more than 3,700 man-days and 70 cents per patient for laundering soiled linen.

The technic employed was to have all cases verified by the dermatologist who directed them to an adjacent building where a technician was always on duty. While the patient showered and scrubbed himself thoroughly, his cotton clothing, soiled linen, and blankets were steam sterilized. If wearing woolen clothing, the patient was advised to have them dry-cleaned at once. Then he was sprayed from chin to toes by means of a continuous pressure hand spray, particular attention being paid to the more heavily infected areas. The patient had his face covered during this procedure to protect his eyes. He was instructed not to bathe until he returned the following day, when the spray was repeated and the patient instructed not to bathe for at least 24 hours. In civilian practice, the solution may be applied with a soft paintbrush.

The solution used when DDT became available was: benzyl benzoate, 10%; DDT, 1%; procaine hydrochloride, 2%; alcohol, ethyl, q.s., 4,000cc. This formula has the incidental value of being practically 100% effective in one application in the treatment of pediculosis pubis.

Of the 1,266 cases treated, 471 returned to be checked and receive a second spray. Since the units moved through the staging area rapidly, the remainder were unable to return. Of these 471 cases, 459, or 97.4%, were completely relieved of all symptoms.

The advantages of this form of therapy are many. Besides the time and linen saved, the simplicity of the treatment encourages patients to desire the authorized therapy. The messiness of the sulfur ointment makes the use of any effective volatile liquid spray preferable. Another advantage is the marked absence of secondary dermatoses commonly seen during sulfur therapy. No soldier complained of more than a temporary local burning. This lack of complicating dermatoses is undoubtedly due to the proper application not more than twice by a trained technician, since cases of secondary dermatitis from benzyl benzoate treatment have been reported.—*Army Medical Bulletin.*

[1] Joss, G. E. Sarcoptic mange in a dog treated with benzyl benzoate, *Vet. Med.*, 38:12, p. 496. December, 1943.

[2] Davidson, J. LaVere. A new treatment for scabies in the dog. *Vet. Med.*, 39:4, p. 174. April, 1944. Also 40:11, pp. 377-378. November, 1945.

[3] Davidson, J. LaVere. Treatment of demodectic mange in dogs. *Vet. Med.*, 5:2, pp. 128-129. 1946.

The Veterinary Practitioner's Contribution to Health*

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SINCE the nations have ceased fighting and peace has come to most of the world, it may be timely to consider some of the diseases transmitted from animals to man that cause pain and unhappiness, often produce invalidism and sometimes cause death.

All veterinarians actively engaged in any branch of veterinary work make great contributions to the public health. This discussion will omit entirely the contributions made by veterinarians engaged in meat and milk inspection and in branches of public health service, and relate only to the contributions to the betterment of public health made by practicing veterinarians in great agriculture areas such as this; taking up only those diseases common here.

Edward Jenner,[1] father of smallpox vaccination (1796), furnishes my text:

"The deviation of man from the state in which he was placed by nature seems to have proven to him a prolific source of diseases. From the love of splendour, from the indulgences of luxury, and from his fondness for amusement, he has familiarized himself with a great number of animals, which may not originally have been intended for his associates.

"The wolf, disarmed of ferocity, is now pillowed in the Lady's lap. The cat, the little tiger of our island, whose natural home is the forest, is equally domesticated and caressed. The cow, the hog, the sheep and the horse, are all for a variety of purposes brought under his care and dominion."

Trichinosis

Gould[2] states that during the past decade surveys of autopsy material to determine the incidence of trichinosis in man have revealed a surprisingly high frequency of infection with *Trichinella spiralis* in the adult population of the United States. It is remarkable that in these studies a review of the case histories after autopsy, of the subjects who were found to be trichinous revealed a history of infection during life only in rare instances. In most of these trichinous subjects, the numbers of larvae present in the skeletal muscle were small, but in many instances the numbers were large, 100 or more larvae having been found per gram of muscle. Individuals revealing such heavy infections may very well have suffered from symptoms during life—symptoms whose pathogenesis was not recognized. While the nature of the illness is usually recognized when the disease occurs in endemic form, it appears certain that up to now, the correct diagnosis has been missed frequently in sporadic cases of clinical trichinosis. In any case the invasion of man by this parasite is far more common than most of us have realized.

Proper legislation enforcing the sterilization of garbage for swine feeding together with the dissemination of information regarding the danger of eating uncooked pork, all help to lessen the incidence of this infection in man.

However, personal warning and advice by veterinarians with particular reference to the reliability of proper freezing, if such foods are to be used uncooked, is more effective than ordinary propaganda among those who have for generations here and in the "old country" eaten uncooked pork.

Swine Erysipelas

This disease can be transmitted from swine to man by handling infected pork products, performing autopsies on infected carcasses and by pricks from a hypodermic contaminated with *Erysipelothrix rhusiopathiae*.

Veterinarians warn persons on infected farms, aid medical men in making diagnoses and prevent the disease in swine by either serum or culture and serum treatment, thus lessening the amount of human exposure.

Cowpox

Cowpox is spread readily from infected cattle to susceptible milkers and, if not aggravated by mixed infections, it is no more serious than any other smallpox vaccination.

Veterinarians alleviate the seriousness of such infections or prevent them altogether by the proper care of the affected cows and instructions to milkers as to the proper care of their hands.

Actinobacillosis-Actinomycosis

These infections are seldom, if ever, transmitted direct from animals to man, but man is infected by chewing straw or grains contaminated by the organisms which cause these diseases. For this reason these maladies are most apt to affect those living on farms on which there are infected livestock. Veterinarians warn such persons that they can be infected in the same way as the cattle and that they are especially apt to contact either of these diseases if they chew on straw or grain.

*Presented at the Annual Meeting of the Saskatchewan Veterinary Association, Regina, Nov. 23-24, 1945.

Ringworm

For the purposes of this discussion, all ringworm transmitted from animals to man are divided into two classes; those transmitted from pet animals and those transmitted from cattle. By curing the affected pets early with proper treatment and by segregating them from the family until cured, the veterinarian prevents transmission of this disease to man.

Cattle ringworm can be a serious human skin infection and very often disfigures the affected person by leaving large, partially hairless spots on the scalp or face with an attendant roughened, scarred skin.

Veterinarians, by providing proper treatment for affected cattle and by warning owners of the danger to persons do much to prevent damage from this infection.

Brucellosis

Brucellosis from a public health angle is the present challenge to the veterinary profession. Two great debilitating disease conditions of man lie in its wake, namely undulant fever and Brucella allergy.

Undulant fever is a chronic debilitating disease of man contracted from animals or animal products. It produces invalidism for months or years and is fatal to a small percentage of persons infected.

A large percentage of those who recover develop allergies and, when exposed to either the live or dead Brucella organisms, they manifest at times all the systemic symptoms of a Brucella infection for 12 to 20 hours followed by recovery. Better methods of diagnosis are needed at this time, that allergic victims may know the cause of their illness and can prevent reactions by avoiding contact with Brucella organisms, including eating butter, cream, cheese, etc., only from the milk of cattle free of the disease.

In eliminating brucellosis from swine and cattle herds, veterinarians protect persons from infections and resulting allergies.

If cattle that react positively to brucellosis are held in the herd, veterinarians protect the owners by insisting that all milk be pasteurized or boiled if used for human consumption, thus preventing further chance of human brucellosis infection and allergy.

In addition to the two conditions described several others suggest an origin in Brucella infection. Many cases of arthritis[5] and conditions similar to and possibly actually Hodgkins disease[6] owe their origin to Brucella infection.

When the complete story is finally written and the book on brucellosis is closed, I am sure we shall find that it had greater public health significance than bovine tuberculosis and here the veterinarian made his greatest contribution.

Encephalitis

In the 35th and 36th annual reports of the State Veterinarian to the North Dakota Livestock Sanitary Board there appears the following paragraphs[3]:

"The highest instance of encephalitis per 100,000 persons was in North Dakota and the highest fatality rate, 16%, was in Nebraska.

"Symptoms of this epidemic were similar to those described in the St. Louis type of encephalitis and those described by W. M. Hammon for the encephalitis in the Yakima Valley of Washington.

"From the beginning it was apparent to all close observers that this disease was associated in some way with the encephalomyelitis which has occurred during so many summers in the horses in North Dakota.

"In the Livestock Sanitary Board report for the year 1939-40, covering the year of 1938, when the first cases of encephalitis in the human occurred, we find the following:

'For six consecutive years beginning in 1933 North Dakota had cases of encephalomyelitis among its horses, the number of cases depending largely on whether or not mosquitoes were plentiful. During the dry years, when there were few mosquitoes, the cases were in isolated places near water courses. During the wet years, when there were many mosquitoes, the disease was present in all parts of the State. After one or more severe outbreaks in a locality, the disease became lighter and there were fewer cases and a higher percentage of recoveries.'

"It is strongly indicated that this outbreak of encephalitis in the human was caused by the same virus that causes encephalomyelitis in horses. If this be true, however, one wonders why we did not have any cases in the human in 1935, when the disease was much more severe in the horse, or in 1937, when we had over 24,000 cases among the 400,000 horses in the State. If the human encephalitis was due to the virus of equine encephalomyelitis, it would appear that some change in the virus made it less virulent for the horse but more virulent for the human. This concept is not new, as other diseases have been known to change sufficiently in one species of animal to become particularly virulent for another. Hagan[4] makes the following statements concerning the behavior of this and certain other virus-born diseases:

'After a long period during which equine encephalomyelitis has been quiescent, it suddenly caused serious losses in California in 1930, and in successive years has rapidly spread to every state west of the Mississippi River. In a thriving swine-raising industry which had long been established, and in which the disease that we now know as hog cholera had not been known, the disease suddenly appeared in Ohio in 1833 and from there has spread throughout the world. In 1918 a new disease, now known as swine influenza, appeared in the mid-western states of this country and has since caused serious damage. There is good evidence to indicate that this infection is a form of human influenza which has become adapted to swine. Presumably it originated from the human pandemic which occurred in that year. A disease of cattle, known as mad itch, or Aujeszky's disease, has been shown to originate from swine, in which it is benign. These findings furnish a clue to the mode of

origin of new diseases. They also indicate that the task of disease control is likely to be never ending.'

"It would appear from later developments that the author was correct in his assumption that the disease in the human was caused by the same virus that causes encephalomyelitis in the horse, and also that it is spread by mosquitoes.

Showing pendulous lips characteristic of the disease.

"Earlier in our studies of encephalomyelitis in the horse we became convinced that the only possible protection the horse owner had was to protect his horses from excessive amounts of mosquitoes, since it was noticed at an early date that a much higher percentage of pasture horses were affected than horses which were used in the field, for the simple reason that the horses which were worked were protected somewhat from mosquitoes at night and also during the day by mosquito netting.

"It would seem from this that it requires certain doses of virus to produce the disease and that this dose will vary in different individuals or animals. Smaller doses of virus than enough to produce the disease will act as a vaccine against the disease.

"Some sanitarians and veterinary practitioners have believed that the disease in the horse should not be named equine encephalomyelitis, since the same virus affects many species, including man. However, we believe that a change has been brought about by many passages of this virus through the horse and that it has gradually become less virulent for the equine but virulent enough for man to produce encephalitis.

"If this be true, the horse has played his role in the human epidemic.

"It is more likely, however, that a few human beings were susceptible to this virus even in the beginning of our horse outbreaks in North Dakota, since a few men were reported as developing encephalitis after taking care of such horses even as early as 1934 and the fact that they had a part in increasing the virulence of this disease seems probable."[3]

If veterinarians have made a contribution to public health in connection with this disease, it was in perfecting a reliable, formolized virus-vaccine which affords good protection to both the horse and man and thus lessens the potential virus reservoir.

Malignant Edema and Anthrax

Both of these diseases are considered together since field cases usually occur in farmers who have skinned animals dead of one or the other of these diseases.

Warning by veterinarians and livestock sanitary authorities to farmers not to skin the carcasses of animals unless they know such animals died from a non-infectious disease helps to prevent human infection when the warning is heeded.

The veterinarian often prevents infection by inducing farmers who have skinned animals that have died to scrub to disinfect their hands immediately and to trim their fingernails short. Also by cautioning them to see their doctor immediately if infection develops.

The veterinarian in addition notifies the local physician, the county health officer and the state public health office of the possibility of trouble and sees that curative serum is available, thus materially lessening the number of infections and deaths from agricultural anthrax.

Tuberculosis

Between the end of the first World War and the beginning of the second, there was completed in the United States the greatest disease control campaign the world has ever known. I refer to the reduction of tuberculosis in cattle that ran as high as 35% in some states at the beginning to less than 0.2% at present.

Initiated purely as an economic campaign, the suppression of bovine tuberculosis actually was the greatest public health accomplishment yet known, though no public health funds were used.

References

1. Hull, T. G. Diseases Transmitted from Animals to Man (Foreword), 2nd edition, Charles C. Thomas, Springfield, Ill.

2. Gould, S. E. Trichinosis, Preface VII. Charles C. Thomas, Springfield, Ill.

3. 35th and 36th reports North Dakota Livestock Sanitary Board.

4. Hagan, W. A. The veterinarian's contribution to human welfare. *Vet. Med.*, 34:2, pp. 74-77. 1939.

5. Goldfain, E. Studies in eighty arthritis cases with associated undulant fever findings. *Southern Med. J.*, 31, p. 325.

6. Kracke, R. R. Hodgkin's disease. Dicsussion of the pathology of human brucellosis by Parsons & Poston, *Southern Med. J.*, 32:1. 1939.

6. Wise, N. Bowman & Poston, Mary A. The coexistence of brucella infection and Hodgkin's disease. *J. Am. Med Assn.*, 115, pp. 1976-1984. 1940.

Diagnosing Lightning Stroke

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IT IS beyond the ability of most of us to comprehend the enormity of the power of lightning for the short time the current is passing through an object. Oscillographic records of lightning strokes have been reported in the literature at various times. A limited review of the literature on this phase of lightning stroke has revealed reports of lightning strokes of 1,000,000 to 5,000,000 volts; 1,200 to 200,000 amperes; lasting for 0.04 to 0.51 seconds and having a total charge of 0.61 to 164.1 coulombs of electricity.

The shattering force of some lightning strokes is truly amazing. Bellaschi made the following report: "The explosive and shattering effect of a stroke, with 140,000 ampere discharge for a period of 45 microseconds with a half crest of 190 microseconds, when confined to a bore having a diameter substantially less than 2cm gives rise to an internal pressure in the order of 10,000 to 20,000 pounds, and perhaps more, per square inch."

It has long been an accepted procedure for a farmer to insure his investment in livestock against large scale sudden and disastrous losses due to lightning stroke. It is not uncommon for these losses to be so extensive as to seriously hamper the future farming operations if some insurance was not available to help the farmer out of his difficulties. The diagnosis of death by lightning stroke is not difficult in these cases of large scale losses but when individual animals are lost and it is suspected that lightning stroke is the cause of death, it becomes necessary that the diagnosis of the cause of death be as accurate as possible. If this diagnosis is not accurately made, then an injustice may be done the owner of the dead animal if the death is attributed to some other cause. In the same way an injustice will be done the insuring organization if an animal, that has died from some cause other than lightning stroke, is inadvertently paid for, due to an inaccurate diagnosis of the cause of death being lightning stroke.

It is interesting to note that some observers, with a wide experience, consider some anatomical changes found in cases of death due to lightning stroke or electrocution, as pathognomonic when they occur, even though these changes do not occur in all cases.

Following are symptoms described in the literature. Post-mortem reports were not used unless there was positive proof that death was due to lightning stroke or electrocution.

Following is a compilation of the macroscopic anatomical changes found:

Skin

Michael considers it important to notice if the skin is more than normally adherent to the subcutaneous tissue. He states that he finds the skin so adherent in cases of death due to electric stroke that the animals are difficult to skin.

Hyperemia of the skin at the point of contact with subcutaneous bruises, arborescent hyperemic markings or burning or singeing of the hair are generally mentioned and when found are very helpful. Markings in the hair due to the running off of water from a rain should not be confused with the above. Some owners of dead animals desiring to collect for death from lightning stroke are prone to consider these hair markings as signs of singeing by lightning.

There was a wide variance of opinion found in reviewing the literature in regard to the percentage of the animals killed by lightning stroke which show scorching or burns. As I reviewed the literature, the thought came to me that the type of soil might have some bearing on this difference of observation. May it not be possible that soils carrying traces of iron or other metals can so affect the current to such an extent as to account for this difference of experience?

Eyes

Dilated pupils in cases of death due to lightning stroke were recorded by Pope, Spencer, Davies and Knaggs and, in cases of death due to electrocution, by Green in three cases and by Squire in 114 cases.

Pope found the conjunctiva congested in two cases of death due to lightning stroke.

Squire found a star fracture of the lens in 114 cases of death due to electrocution.

Heart

Spencer "considers the firmly contracted heart (especially the left ventrical), empty of blood, together with a varying amount of congestion of the lungs to be pathognomonic of death by electric stroke or lightning." He reports finding these lesions in five cases.

Contraction of the left side of the heart was also found in cases of death due to lightning stroke by Pocklington and Hennessy.

Squire in 114 cases of death due to electrocution, found only about 5% to have the left side of the heart firmly contracted. There were two cases with a ruptured heart wall and one with the wall of the aorta ruptured.

Knaggs and Reid (two cases), reported find-

ing the heart distended in cases of death due to lightning stroke.

Shield found the heart quite uncontracted when examined about 40 hours after death.

Green in two cases of death due to electrocution, found the heart contracted in one and not in the other.

Blood

In reviewing the literature the change that was most often mentioned and was never refuted was the fact that the blood was fluid or very few clots were found. This change was noted by Pocklington, Hennessy, Shield, Knott, Reeks, Reid (two cases), Knaggs in necropsies in cases of lightning stroke in livestock. In three cases the same change was noted by Green in cases due to electrocution, and by Squire in 114 cases. Squire states that the fluidity of the blood is due to a destruction of fibrinogen and fibrin ferment.

Sunderman, in cases of electrocution, records finding the blood serum orange-red color instead of the normal yellow.

Spleen

The spleen was found to be dark and heavily congested with fluid blood by Michael in a case of death due to lightning stroke and by Green in two cases of death due to electrocution.

Lungs

Congestion of the lungs in cases of death from lightning stroke are recorded by Michael and by Spencer in four cases. In cases of death due to electrocution, Squire generally found the lungs emphysematous or engorged with blood in 114 cases of death due to electrocution. Green reports congestion of the lungs in a case of death due to electrocution. Knaggs found no congestion of the lungs in a case f death due to lightning stroke.

Ziegler considers the post-mortem lesions of suffocation as typical of death due to lightning stroke.

Congestion

A general congestion of the blood vessels was recorded in cases of death due to lightning stroke by Pocklington, Shield and Reid (two cases).

Squire records this condition in 114 cases of death due to electrocution.

Hemorrhages were found by Reid in two cases of death due to lightning stroke and by Green in cases of death due to electrocution. Hemorrhages in the nervous tissue in a case of death due to electrocution were found by Hassin. Squire in 114 cases of death due to electrocution, found hemorrhages in the nervous tissue in several cases. Ziegler considered hemorrhages as a post-mortem lesion of death due to lightning stroke.

Kidneys

Michael gives a detailed report of fissures in the kidneys and of their having a parboiled appearance in a case of death due to lightning stroke.

Fractures

Fractures as a result of lightning stroke were found by Reeks, Kittrell and Knaggs.

Brain and Nervous Tissue

Congestion of the brain was found by Spencer, Hennessy and Knaggs in cases of death due to lightning stroke and by Hassin in a case of death due to electrocution.

Fissures in the brain are recorded by Pocklington in a case of death due to lightning stroke and by Hassin in a case of death due to electrocution. Knaggs could find no fissures in the brain in a case of death due to lightning stroke.

Histopathology

Microscopic examination of tissues from animals suspected of having been killed by lightning stroke is not generally practiced, but following are a few findings in cases of death due to electrocution that seem worthy of note by those being called upon to decide whether an animal has been killed by lightning stroke.

Squire in 114 cases of death due to electrocution reports the "blood markedly granular under a microscope and showing an electrolytic dissolution of the red corpuscles."

Detailed descriptions of the methods used and the findings in examination of brains of animals killed by experimental electrocution are given by Morrison.

Bibliography

Bellaschi, P. L., Lightning currents in field and laboratory. *Elect. Eng.*, 54, p. 837. 1935.

Davies, E., L. R. C. P., Death from lightning. *Brit. Med. J.* (Lond.), 2, p. 987. 1898.

Green, R. Lewis, M. R. C. V. S., Deaths by electric shock. *J. Comp. Path. & Ther.* (Edin.), 17, pp. 246-248. 1904.

Hassin, George B., M. D., Changes in the brain in accidental electrocution. *J. Nerv. & Ment. Dis.*, 86, pp. 668-673. 1937.

Hennessy, D., M. D., Three cases of lightning stroke. *Brit. Med. J.* (Lond.), 1, p. 1294. 1889.

Kittrell, E. L., Lightning stroke. *J. Am. Vet. Med. Assn.*, 75:1, p. 103. 1929.

Knaggs, R. H. E., M. R. C. S., Unusual injuries caused by lightning stroke. *Lancet* (Lond.), p. 1216. 1894.

Knott, John, A. M., M. D., Ch. B., & D. P. H., M. R. C. P. I.; M. R. I. A., Death by lightning. *N. York Med. J.* (etc.), 91, pp. 1326-1328. 1910.

Michael, L. B., M. D. C., General post-mortem lesions of lightning stroke in eight horses and two cows. *Am. Vet. Rev.*, 43, p. 645. 1913.

Morrison, Raymond, M. D., Weeks, Arthur, and Cobb, Stanley, M. D., Histopathology of electric shock. *J. Indust. Hyg.*, 12, pp. 324-327 and 364. 1930.

Pocklington, E., M. R. C. S., and Collyns, R. T. Poole, M. R. C. S., Notes on the injuries in three

cases of persons struck by lightning. *Lancet* (Lond.), 2, p. 17. 1897.

Pope, Percy, M. R. C. S., Five cases of lightning stroke occurring simultaneously. *Lancet* (Lond.), 2, p. 718. 1890.

Reeks, H. Caulton, Investigation of suspected lightning stroke. The Lancashire V. M. A. Scheme of Enquiry. *Vet. Rec.*, 12:11, p. 297. 1932.

Reid, H. A., F. R. C. V. S., Death from lightning stroke. *Vet. J.* (Lond.), 72, p. 159. 1916.

Shield, Marmaduke, M. B., F. R. C. S., Delepine, Sheridan, M. B., B. Sc., The post-mortem appearances in a case of death from the action of electricity. *Brit. Med. J.* (Lond.), 1, pp. 531-534. 1885.

Spencer, H. A., L. R. C. P., M. R. C. S., Death by lightning stroke. *Transvaal Med. J.* (Johannesburg), 3, pp. 118-123. 1907-08.

Squire, Amos O., M. D., Observations made at electrocutions of 114 men at Sing Sing prison. *Med. Rev. of Rev.*, 30, pp. 561-565. 1924.

Sunderman, F. William, M. D., and E. O. Harper, M. D., Studies of serum electrolytes XI. Blood changes following death from contact with alternating current of high intensity. *Arch. Path.*, 22, pp. 738-742. 1936.

Ziegler, Dr. Ernst, Revised by Symmers, Douglas, M. D., General Pathology, p. 11. 1921.

* * * *

The Microscopic Test for Infectious Mastitis

The microscopic test for infectious mastitis consists of examining under a microscope a properly collected and incubated (37° C. for 12 to 15 hours) milk sample. In collecting the milk sample, care must be taken to exclude contaminating bacteria, particularly extraneous staphylococci and streptococci, because these organisms grow and cannot easily be differentiated microscopically from those causing mastitis. Contaminating bacteria of any type, of course, reduce the accuracy of the test.

Collecting Milk Samples

To get satisfactory results in bacteriological tests for mastitis, it is important to obtain samples in as sanitary a manner as possible. Collect an 8cc composite (all quarters) sample by milking directly into a sterile tube containing preservative. It is desirable to use a preservative, such as sodium azide and brilliant green, if the collected samples are not incubated within 24 hours.

The following procedure is designed to eliminate contaminating bacteria to as great an extent as possible. Failure to carry out each step may cause the milk samples to be unfit for microscopic examination.

1. Samples may be collected at any time except within a two-hour period after milking.

2. Wash udder, teats and end of teats thoroughly with warm chlorine solution (200 to 400 p.p.m.) before taking the sample.

3. Wash the hands thoroughly in chlorine solution (200 to 400 p.p.m.).

4. Discard the first two streams from each quarter into a strip cup.

5. Collect a composite (about 2cc from each quarter) sample by milking directly into a sterile tube containing the preservative.

6. Mix the preservative and milk by inverting the tube several times and label all samples.

7. Refrigerate samples if not ready to place them in the incubator immediately.

Making Microscopic Test

Incubate the samples at 37° C. for 12 to 15 hours. Use loop (4mm outside diameter) of 24-gauge wire (prepare by bending wire around 6d box wire nail). Spread one loopful of well mixed milk over a 4 x 8mm area on a slide. A series of smears can be placed on each slide. Allow the smears to air-dry. Fix smears by heating bottom of slide over a flame and then cooling, or by placing slide in the 37° C. incubator for one hour.

Staining procedure for fixed milk smears:

1. Immerse the slide in xylol for one minute.
2. Drain excess xylol from slide.
3. Immerse in 95% alcohol (or 70% rubbing alcohol) one minute.
4. Drain excess alcohol from slide.
5. Immerse in methylene blue staining solution about one minute.
6. Drain and dry.
7. Use an oil immersion lens to examine smears.

Interpreting Results

1. Positive cow: (a) Streptococcic infection—streptococci (four or more cocci per chain) are present with or without an increase in the number of leucocytes. (b) Staphylococcic infection—staphylococci (cocci seen in clusters) are present with an increase in the number of leucocytes.

2. Suspected cow: An increased number of leucocytes is present, with no streptococci or staphylococci.

3. Negative cow: No streptococci or staphylococci are present, and leucocytes are within normal range.

Leucocytes may or may not be present with mastitis-producing bacteria. If more than 1,000,000 leucocytes per cubic centimeter (calculated on basis of more than three leucocytes per field with a microscopic factor of 300,000) are observed, the cow is regarded with suspicion. Remember that near the end of lactation and following parturition cows have an increased number of leucocytes in their milk. Always correlate the results or findings of the microscopic test with the clinical picture as observed in each cow.—*Department of Veterinary Pathology and Hygiene, College of Veterinary Medicine, University of Illinois.*

Reminiscences X

By NELSON S. MAYO
Mt. Dora, Florida

WHILE at Rotterdam, Holland, we went one morning (Aug. 1, 1914) to visit the National Serum Institute, Professor Poel and 11 of his assistants were absent and we were shown through the Institute by the only veterinarian remaining. Actually Professor Poel and his assistants and many practitioners from the area were at the stockyards examining horses which were being mobilized by the thousands for the Dutch Army. But we didn't learn their mission till later. When we returned our baggage had been removed from our rooms and set out on the sidewalk in front of the hotel, which had been taken over by the military. This was our first intimation of war. That day the German army crossed the Belgian frontier, but we didn't learn that for several days. After some difficulty, we obtained passage that night for London.

England was on the verge of war. We had no English money and were unable to get travellers' checks cashed. Doctor Blattenberg after a long and intimate talk with the young lady cashier at the hotel persuaded her to cash a two pound check and he distributed it around so we had a little spending money.

AMERICAN VETERINARIANS AT OUD-BUSSEM DAIRY FARM, HOLLAND, JULY, 1914

Front on the reader's right: T. B. Harries, L. E. Day, Wray Gill, W. Reid Blair, J. F. DeVine, J. L. Hoylman, N. S. Mayo, W. B. Holmes, C. J. Marshall, E. F. Sanford (with the hat on), Prof Herman S. Frenckel, J. S. Blattenburg (standing), J. M. Armstrong, R. C. Julien, Ross Huson, A. Eichhorn, F. Vos, Director of the Oud-Bussem Dairy Farm, E. B. Ackerman, F. B. Hadley, and Prof. Kroon of the Utrecht Veterinary College

The opening session of the International Veterinary Congress was formal and owing to the serious international situation adjourned *sine die* the following day. England declared war two days later and shipping schedules were all upset. One could only wait and hope for the best.

An English friend invited me to attend a stock show at Lord Rothschild's estate near London. There was a very fine exhibition of all kinds of livestock but what interested me most was a demonstration of English sheep dogs. A number of "wild" sheep were brought in by cart, released in a big meadow and a shepherd and his dog were required to round them up and pen them in a small enclosure made of four hurdles. The skill and intelligence of these dogs was marvelous. When the hunters were shown I got down with the "rail birds." The first horse "funked" the first gate and a stranger clapped me on the back and said, "I'll bet 'e two bob 'e won't take it." The sum didn't seem large so I told him he had a bet on. The horse was brought down again and cleared the barrier in good shape. I turned to the man and said, "you owe me two bob." He said, "really sir, I 'aven't two bob." I asked him how much a "bob" was so I would know how much was due me. He said, "a bob is a shilling sir." It's still due.

Some of our party got return passage from Liverpool on a freight boat. The accommodations were poor and the food was worse. The boat took a course north of Ireland. It was a cold, wet and a very rough passage. Some of our party hardly took a meal, among them I recall well Drs. C. J. Marshall and John Devine. Later during the war I noted by the press that this ship picked up survivors of a torpedoed boat. The next time I saw Doctor Marshall I asked him if he saw what the old Manchurian did, and he said, "yes, but if I had been in the water and saw her coming I would have told them to go on, leave me here."

When the United States entered the war Dr. Gerald Griffin who was at the head of the veterinary service in Washington appointed me to examine veterinarians for the army service. At that time the veterinarians had the rank of 2nd lieutenant but recent legislation by Congress had authorized increased rank and I decided to take the examination early. My papers were lost and after several weeks I took another examination. A couple of months later I received a commission as 2nd lieutenant. In the meantime Captains and Majors had been commissioned. I returned my commission with the statement that I would not accept a commission and be ranked by young men just out of college, a number of whom I had examined for the service.

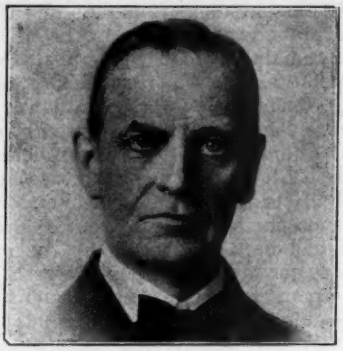
After the war, when the Officers' Reserve Corps was organized, Major Lytle, who was stationed at the 6th Corps Area Headquarters in Chicago, called me by phone and wanted to know why I didn't join. I told him that the way my application for service at the outbreak of the war was treated, I had concluded I was not wanted. He stated that he had just returned from the Surgeon General's office, that he wanted me to come into the service, and asked what rank I wanted. I told him I would leave that to the Surgeon General. To my surprise I was given the rank of lieutenant colonel.

As a Reserve Officer I was ordered for training to Camp Custer, Mich., Sixth Corps, Area Headquarters, Chicago, Fort Snelling, Minn., Fort Robinson, Nebr., and the Surgeon General's office in Washington. The place I enjoyed was Fort Robinson, located on the site of the old Red Cloud Indian Agency, a post famous in the old frontier. Here Crazy Horse, the famous Sioux chief was killed, and many other stirring events came to pass in pioneer days.

At the time I was there, Fort Robinson was a remount depot. There were about 75 high class brood mares mostly with foals at side—and a number of stallions for service at the station. All horses and mules purchased for the army west of the Mississippi were shipped to Ft. Robinson to be dipped, mallein tested and go through the shipping fever period. After the animals were tested and dipped they were turned out to pasture as experience had demonstrated that the shipping fever cases did better at pasture than when stabled.

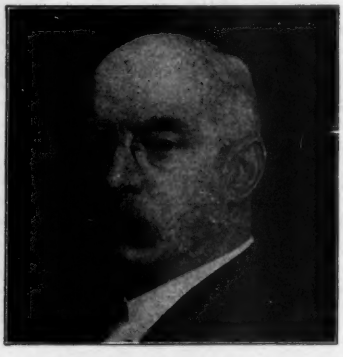
Major (now Colonel ret'd.) C. C. Whitney and Capt. King were the veterinary officers at the remount. The mornings were spent at the veterinary hospital or at the dipping vat. In the afternoons Captain King and I rode the pastures looking for any cases that needed hospitalization. I enjoyed my tour of duty there greatly. I could not have picked a better place to do the things I liked to do.

In 1918 I was again elected Secretary of the A. V. M. A. At that time the Secretary's office



PIERRE A. FISH, D.V.S., D.Sc.
Professor of Physiology, New York State Veterinary College, 1902-1912; Dean, N. Y. State Veterinary College, 1929-31; Editor of *J.A.V.M.A.*, 1915-1918

was wherever the secretary happened to live. The same was true of the Editor of the Journal As I remember, the first editor of the Journal was Dr. P. A. Fish of the New York Veterinary College. He was followed by Dr. W. H. Dalrymple of the University of Louisiana and the

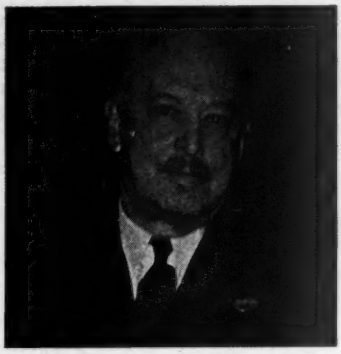


WILLIAM H. DALRYMPLE, M.R.C.V.S.
Veterinarian, Louisiana Agricultural Experiment Station, 1889-1919; Editor, *J.A.V.M.A.*, 1918-1919

third was Dr. John R. Mohler of Washington. I recommended to the Executive Board that the offices of secretary and editor be combined and that a permanently located office be established. This was done and I was offered but declined the newly established position. Dr. H. Preston Hoskins was selected. Later I was appointed chairman of the committee on Education to succeed Dr. H. E. Bemis of the University of Pennsylvania upon his death.

Doctor Bemis had partially prepared the an-

nual report of the committee with the aid of his wife who had completed it. The committee felt it would be a courteous gesture to ask her to present the report at the annual meeting of the A.V.M.A. There were one or



JOHN R. MOHLER, V.M.D., D.Sc.
Chief, Bureau of Anical Industry, 1917-1943; Editor, *J.A.V.M.A.*, 1920-1923

two things in the report that the committee thought would invite opposition particularly by Dr. C. A. Cary of Alabama and those who knew him were aware that he could stir up quite a rumpus. It was arranged that some one would make a motion to *accept*, not *adopt*, the report. This was explained to Doctor Cary beforehand and the report went through as planned.

Several years later the committee recommended that the veterinary colleges be classified similar to the plan of the American Medical Association. When the report was presented Doctor Cary quickly moved that the report be *accepted*, but his motion was defeated and the report was adopted. The committee placed the colleges in classes A. B. and C. This classification was not adopted by the Association. Every dean whose college was not in class A thought it ought to be there.

The committee expected plenty of verbal brickbats and was not disappointed but they returned a goodly number. It had not expected the classification to be adopted, but it was thought that the proposed classification would give deans an excellent argument to present to the Presidents of their colleges and the boards on control to secure needed funds and support. It worked. A number of deans who opposed the report later reported it was a great help to them.

One of the important things about the report was to present to the A. V. M. A. standings of the veterinary colleges in the opinion of the committee. It is probable that no single action of the Committee on Education has done more for the advancement of veterinary education than this classification of veterinary colleges. While the classification was not adopted the vote of the association authorizing the classification still stands and any future committee has authority to classify the colleges if they deem it advantageous to do so.

I retired from active business at the close of 1929. Mrs. Mayo and I have found much pleasure in travel and we wanted to go places while we were able to enjoy it. Trips have been made to Europe, the West Indies, Panama, Central America, many of the famous parks in the United States and Canada, Alaska and the Hawaiian Islands. In Honolulu we found Dr. Bernard Gallagher who at one time was an assistant of mine in Cuba. He was at that time in charge of the U. S. Quarantine Station and Laboratory there. He gave us a delightful trip around Oahu and took me to a small adjacent island where a wealthy man was raising *black* red Irish setters. Col. R. C. Musser, Col. Lloyd C. Ewen (both since deceased) and other army officers entertained us. I was taken to call on a Japanese veterinarian who was well known there. He invited Mrs. Mayo and myself to his house for a Japanese dinner but as we were forewarned that it meant sitting cross legged on the floor for an hour or more we declined with thanks.

Reminiscences are supposed to refer to incidents long past. Now I'm getting to the present and will close. In review it appears I may have over-emphasized the humorous incidents. I think I have a fairly large "bump" of humor and it has been a great help many times when the going was rough. I have had my share of such times as everyone has or should have for they are usually helpful in the long run. On the whole our life has been a very happy and interesting one. We have had our sorrows—great sorrows—in the loss of two of our children. I cannot close without a tribute to my wife whose tact, rare good judgment and loyal support in good times and bad has been an inspiration.

In the 56 years that I have been a member of the veterinary profession I have seen great changes from the time when almost every veterinarian made up his own colic drenches, condition powders, liniments, blisters, etc., to what he has available today, but I think the greatest advance has been made in veterinary education and the aids that science has brought to our profession. I am confident that the next half century will bring still greater progress. The young veterinarians who are entering the profession today are to be envied.

(The End)

Clinical Reports

Method for Direct Blood Transfusion

I have been using a simple method for direct transfusion of blood, in measured amount, from one animal to another. It is best adapted to small animals.

My experience in the use of the two-way valve apparatus for direct transfusion has been that the more mechanism introduced into the blood line between the animals and the more churning the blood is subjected to in passage, the greater the tendency to clot.

A simple appliance with which the blood contacts only needles, tubes and syringe is contrived as follows: A large glass syringe is attached, by a short piece of rubber tubing to a glass hypsiloid tube. Two longer pieces of rubber tubing are attached to the arms of the "Y," and to 12-15 gauge needles by adapters.

The needles are inserted in the jugular veins of donor and recipient in rapid succession, the apparatus attached and suction applied with the syringe held vertically and above the tubing. This draws the air out of the tubes and fills them with blood. The syringe is detached and the air and such blood as it contains expelled. It is then again attached to the apparatus. Next the tubing leading to the recipient is clamped with suitable clamp or hemostat and suction applied. The syringe fills with donor blood. The clamp is removed from the recipient's tubing and applied to the donor's. The syringe is emptied into the recipient's vein. This may be repeated as often as necessary.

I hope this will be found useful to others beside myself.

M. GREGORY CARBONE

New York, N. Y.

Pig Forceps Useful in Relieving Choke

The article on choke in the February issue of *Veterinary Medicine* interests me. I think everyone prefers to remove these obstructions mechanically where it can be accomplished. Years ago it was my practice, in choke in the cow to put a speculum on the animal, open it wide and run my arm "down her throat" and, if possible, grasp the object and try to remove it. That method has rather obvious drawbacks. If the head is not held rigidly one can get his arm injured. The fingers can not reach very far beyond the pharynx and a spherical object as an apple or potato is difficult to grasp.

Of recent years I have used a pair of long-jawed pig forceps to which longer handles were welded. By putting an obstetric chain around the neck just below the obstruction and drawing it taut I prevent the object whatever it may be from being pushed away from me. I then pass the forceps down to the obstruction, open them somewhat, push a little and set them on whatever it is—potato, apple, beet, etc., sometimes wire—and withdraw it. Use of the forceps overcomes all the disadvantage of manual removal. It is easier, quicker, safer and surer.

E. A. HALL

Little Falls, Minn.

Chemical Caponization of Cockerels

The writer has been caponizing young roosters with stilbestrol for the past two years with satisfactory results. The purpose of this report is to acquaint practitioners who haven't tried it with its possibilities.

Most of the research reports on this subject are on the use of intra-muscular injections of stilbestrol. I administer this agent orally in one milligram doses, on the theory that a dose that is too large may stimulate rather than retard the male sex characteristics.

The best age at which to give stilbestrol to cockerels is just as early as the sexes can be determined or at about five weeks of age. The tablet seems to retard growth of the bird for about two weeks. They eat less during this period than the controls and gain slightly less in weight. After two weeks, the treated birds consistently outgain the controls.

The chickens treated continue to grow and develop without any signs of male characteristics. They do not crow or fight. They develop into blockier huskier individuals. The only difference between birds from which the testes are removed surgically and those given stilbestrol is the latter have the larger combs.

The testes of treated birds that I have dressed were about the size of a small bean, yellow and atrophied.

The fat in these birds receiving stilbestrol seems to be distributed through the muscle rather than deposited subcutaneously and in the abdominal cavity.

When the treated birds reach the age of five months they start to crow and develop the deportment of a rooster. This can be stopped by giving two 1mg tablets of stilbestrol. They can then be fed for the Christmas market by which time they can be made to weigh eight to nine pounds. An occasional freak will get as large as a turkey. As for eating, I do not believe that there is anything to equal it or comparable in poultry meat.

To get some actual figures on the advantages of chemical caponizing, I supplied a broiler producer with stilbestrol tablets and he conducted some experiments to determine its value. These experiments were not kept with exactitude, but all the birds were on the same feed and were weighed each week. The results were not conclusive but are indicative and, I believe, significant. His conclusions corroborated my own observations which are that administration of stilbestrol to young birds is profitable. There were no slips and no deaths and there are, I believe, possibilities for its use in the poultry industry.

However, I consider the improvement in the quality of the meat to be more important than the increase in quantity.

G. W. BAYLES

Marion, Ill.

Hypoderma Lineata Larvae in Wall of Esophagus

On routine post-mortem inspection at a local packinghouse, Jan. 5, 1946, numerous nodules were noted in the wall of the esophagus of a two-year-old heifer. Examination revealed them to contain larvae of the *Hypoderma lineata* identical to those commonly occurring in the subcutaneous tissue of the back in cattle.

I am aware that during the wandering stage of these larvae they are numerous in the wall of the esophagus, but I have not previously seen full size warbles encysted in this location, nor have I noted a record of this occurrence in the literature.

On several occasions, I have found cysts with a heavy capsule in the heart muscle. They contained degenerated larvae which I have been unable to identify because they were dead and undergoing liquefaction. However, the capsule walls and the larvae resemble those found in the esophagus wall so closely as to suggest the larvae are warbles that they had located in the heart and undergone partial development there.

E. G. PIGMAN

Houston, Texas

Traumatic Pericarditis

A four-year-old Jersey cow showing anorexia, suspended rumination, mild impaction of the rumen, a pronounced drop in milk production, rapid loss of weight and a distinct heart murmur was treated for acetonemia and impaction of the rumen November 20, 1945, by intravenous injections of 500cc C-G P. reinforced followed by 1000cc 50% glucose and 50,000 units of thiamin hydrochloride and the administration through a stomach tube of 20 ounces of bovilax, 180gr of tartar emetic and one ounce of gentian dissolved in three gallons of warm water. The treatment didn't help the cow and she became impacted again.

November 22nd, an exploratory rumenotomy revealed a piece of baling wire 2½ inches long which had passed through the anterior wall of the reticulum till only about ⅛ of an inch remained inside it.

The baling wire was removed and the rumen sutured with two rows of Lembert sutures. The cow looked well right after the operation but died suddenly about 30 minutes later.

A necropsy revealed the puncture reaching deep into the myocardium and surrounded by a fibrous thickening containing yellowish pus.

The striking fact was the size of the pericardium which occupied about ½ of all the thoracic cavity and left only a small space for the left lung. The pericardium was full of caseous purulent material and the whole epicardium was studded with yellowish caseous cauliflower-like growth about ¾ inch high. The myocardium had hypertrophied to about twice its normal thickness.

MANFRED PARKER

Kingfisher, Oklahoma

Johne's Disease

I was called to a purebred Guernsey herd, to see a three-year-old, first-calf heifer, that had been scouring for about 2½ months. I had seen this same heifer nearly four months previously when I had treated her for a previous attack of scouring. She freshened for the first time a month later and shortly thereafter she developed a perisitent diarrhea unaccompanied by straining. She lost condition quite rapidly, losing quite a good deal of weight until at the present time she presented a picture of severe emaciation and dehydration and I was called a second time.

The hair coat was very dull, suggestive of a possible severe infestation of parasites. Microscopic examination of the feces did not support this inference. The pulse was slightly increased but no pain was detected upon heavy palpation of the thorax and abdomen in a search for possible hardware. The temperature was normal and the heifer was very bright and alert. The appetite was good at times, while at other times she showed no inclination to eat. The feces were watery and had a very fetid odor, which was quite noticeable.

Upon examination, a tentative diagnosis of Johne's disease was made because of the history of the chronic diarrhea over a long period and the emaciated appearance of the animal. Needless to say an unfavorable prognosis was given because of the development of clinical symptoms. However, being of very good blood

lines, the owner wanted everything possible done to save her.

A stomach tube was passed to administer mineral oil and a carminative to remove any possible irritating material which the cow might have eaten. This was done to make sure some irritating material wasn't causing an enteritis resulting in the diarrhea. When the stomach tube entered the rumen, a small amount of gas was released which had a very putrid odor suggestive of a grave disturbance of some kind along the digestive tract.

This concluded the treatment until four days later when I saw the animal again. No improvement was noticeable. It was then decided to test the heifer for Johne's disease.

The test was run as follows. Three pre-injection temperatures were taken at two-hour intervals. She showed a temperature of 101.6°, 101.8° and 101.6° F. Then 9cc of avian tuberculin was administered intravenously, and hourly temperatures were taken over a period of 10 hours. They were as follows:

1st hr.—103.0° F.
2nd hr.—103.2° F. accompanied by dyspnea and groaning.
3rd hr.—104.6° F. groaning less severe but the hair coat seemed much rougher.
4th hr.—104.4° F. groaning and very severe scouring.
5th hr.—105.2° F.
6th hr.—104.4° F.
7th hr.—103.2° F. not scouring as much as previously.
8th hr.—103.0° F.
9th hr.—102.8° F.
10th hr.—102.0° F.

The following morning the temperature was normal at 101° F. but the cow was very much weaker.

From the results of the test a positive diagnosis of Johne's disease was made. Unfortunately the owner did not want an autopsy made, so the lesions cannot be cited. The cow was removed from the herd and destroyed.

Summary.—This case seems to support the theories of many investigators of Johne's disease, in that she was a first calf heifer and had been raised on the farm—suggestive of calfhood infection. Also the disease seemed to come on with severity immediately after the animal was subjected to a severe stress (in this case parturition) which weakened its resistance. Medicinal treatment stopped the diarrhea for a time, but it returned at a later date. Also the diarrhea was of a chronic form and lasted over a long period. This resulted in the gradual emaciation and dehydration of the animal.

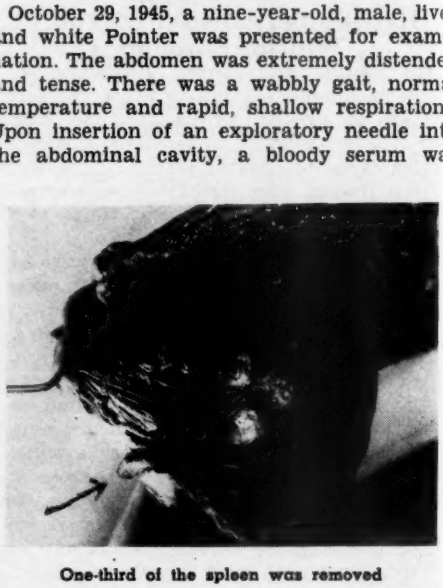
This heifer's reaction to the test was also typical. The height of the reaction was reached between the third and the eighth hours, with the peak about the fifth hour, and then a gradual decline occurred until at 10 hours the temperature was normal. Also the systemic reactions accompanying the rise and fall in the temperature were the usual ones to be expected. The owner was told that he could probably expect recurrences of the disease in his herd from time to time during the next three or four years.

The writer would be glad to receive comments or suggestions on this case. To him it was singularly interesting because of the rarity of reports of it in the veterinary journals, and because of the typical symptoms and course of the disease in this animal.

ROBT. A. BURNHAM
Crete, Ill.

Hemangioma of the Spleen (Splenic Tumor)

October 29, 1945, a nine-year-old, male, liver and white Pointer was presented for examination. The abdomen was extremely distended and tense. There was a wabbly gait, normal temperature and rapid, shallow respirations. Upon insertion of an exploratory needle into the abdominal cavity, a bloody serum was aspirated. A diagnosis of neoplasm was made and an operation advised.



One-third of the spleen was removed

Following the usual pre-operative preparation of the patient and nembutal anesthesia, a mid-line incision permitted removal of a splenic tumor. The spleen was ligated and the distal one-third, including the tumor removed; 2½ gallons of bloody serum was drained from the abdominal cavity. A small quantity of sulfanilamide-sulfathiazole powder was dusted into the abdominal cavity and the incision closed with a row of interrupted, through and through, silkworm-gut sutures. Healing occurred by first intention. The sutures were removed the seventh day.

Examination of the tumor proved it be a hemangioma, weighing 3¾ pounds. To date the dog has been in good health, and has been out hunting this season as well as ever.

A. A. DAVIES

Linden, Mo.

Discouraging Dystocias Relieved by Upward Traction

There are few more harried mortals than the new veterinarian, when he is called upon to relieve one of those near impossible dystocias, a result of mating a Jersey or Guernsey calf to a mature Holstein bull. Crammed with more or less relevant facts garnered by authors who have gleaned from Budapest to Calcutta, he is up against some of the most stubborn situations that ever broke a big boy's heart. Three of my college mates have committed suicide and others are in auctioneering, garage work, farming—anything to escape the feeling of inadequacy that so often floods the fellow faced, let us say, with something like a sixteen-month-old Guernsey with a Holstein bull inside, presenting nothing but a hindfoot big enough for a yearling. The awful feeling, that soon develops into black conviction, that the unshaven audience knows more about it than he does, is the other unnerving factor.

Hereabout we have used all the nickel plated hardware that is glowingly set forth in supply catalogs. We have grovelled for hours intensely "doing an embryotomy" that usually ended up in loss of everything but the sire. We have taken such lubberly fetuses through the side. We have knocked the poor dams in the head and driven away wet and shivering in the five o'clock morning darkness, not at all in accord with the merry crowing of the roosters.

And all the books, authored from Timbuctoo to Texas, have given us little help. Benesch's spinal anesthesia has been a savior and a solace, but the fetotome which he also introduced has not been especially useful.

The one thing that has bolstered our morale for some seven years now is a very simple thing—but all of life looks the better for it. In this period we have not failed to get a calf nor to leave the cow in satisfactory condition. Very often the calf is hog feed, but the 100% score on dozens of dams leaves us humbly grateful, even though we know this record can not last always.

This method was stumbled upon in two barns where our obstetrical tackle perforce had to be hitched to the ceiling. After both these oversize calves had been delivered safely we began to wake up: the sacro-coccygeal structures, when slackened by parturient influences, will spring upward enough to allow a strong pull some halfway between the horizontal and vertical to lift a big, contorted fetus over the pelvic brim and into the zero world without material injury to the dam's posterior nerve supply or other tissues.

The obvious procedure is to pump or funnel in a gallon or so of mineral oil, or even cylinder oil of the better grade, making sure that the calf is lubricated on all sides and well forward. If the cow is standing, it may be necessary to pass heavy wires around an overhead beam for pulley attachment. Traction direction must be about midway between the impossible straight up and the usual straight back—or even a little steeper—perhaps fifty degrees. To avoid stress on the patient's neck, we place a padded rope saddle around the hind quarters, sustain it by crossing the ropes over the back and tie to strong attachments to the cow's right and left. It may be necessary for two strong men to pull on the pulley rope, unprofessional as that may sound.

Pulleys may be slacked off a couple of times for re-examination and perhaps further lubrication. The value of lavish lubrication can scarcely be over-emphasized. We often give the tense traction system a vigorous shaking and rotation. Brutal as all this may appear in the telling, we have not, to our knowledge, seriously injured a cow in seven years. We have pulled the fetus apart and been obliged to make a second attachment, and one cow that we know of later everted the uterus and was destroyed when help could not be obtained. It is good policy to suture the uterus in by vulva tape to prevent an occasional eversion.

If the cow is down, we put some three hitches on each hind leg, lash her to some attachment and then draw off along the floor so as to get the "upward" effect.

Dr. Hinshaw of Adrian, Michigan, has helped us with the big fellows coming head first but hip locked. He taught us that some of these give loose when the fetus is drawn around the maternal ischium toward the dam's head, thus getting the opposite fetal hip past the maternal pelvic inlet.

After forceful delivery, intravenous work and brisk measures to get the dam onto her feet are next in order. We use carbon disulphide, electric prods, electric fence, ear whipping, occlusion of the nostrils, cats drawn down the backbone or a dog by the fetus in view of the mother. If they lie long, they are perhaps increasingly hard to get up.

All this may sound like purest quackery. It would not be reported were it not for the consistent good results that have been obtained by this method. We have been advised to keep it private because of certain criticism, but this seems not quite cricket in view of the aid

we have had from the columns of veterinary publications.

The good results are ascribed to the direction of upward pull lifting the fetus over the pelvic brim instead of blocking it against the brim, and to the minimizing of pressure upon the nerve supply of the posterior limbs. It may be well to repeat the adjuration to lubricate the parts well. With this strong traction, the difference between ruinous friction of the semi-dry hair on maternal tissues and comparatively harmless emergence of the fetus may lie in thorough and copious lubrication.

We are not, of course, advocating any lessening of the usual judicious corrections of malpositions and maneuvers that will deliver a majority of cases of dystocias without resort to the block and tackle and the strong backs of assistants. This method is only for cases in which more conventional measures fail.

In the after treatment of the dam, stilbestrol hypodermically and generous briskly warm douches of normal salt and permanganate of potash seem to clean things up very well. It is gratifying to feel the uterus wake up and contract upon the operator's arm. The subsequent medication of the uterus with the practioner's choice of medicaments is of course, rational. We have had satisfaction by systemic alkalinizing and treatment with the salix compounds, both continued for some time.

It is likely that this procedure would be of some use in equine obstetrics.

J. H. WINTER

Brooklyn, Mich.

Penicillin Used in Cases of Blackleg

A call was received Jan. 2, to come to a herd of Herfords containing a number of calves from two to eight months of age.

One calf about six months of age was down and in a dying condition. It had been noticed to be lame the night before. A necropsy was held. It revealed typical lesions of blackleg.

Another calf had been slightly lame that morning and now (at noon) was down with a temperature of 104.6° F. and breathing heavily. No swelling nor crepitant areas could be detected. A diagnosis of blackleg was made.

One hundred thousand units of penicillin was given immediately and repeated every three hours until four doses had been injected; all intravenously.

At the time of the second injection, the calf lay stretched out flat on its side. At the third injection, there seemed to be some improvement and at the fourth injection the animal was on its feet, somewhat stiff, but eating and drinking and looking well. Recovery followed.

Four additional cases of blackleg in other herds, all showing large, edematous, crepitant swellings, were treated in a similar manner but all died. If any conclusions can be drawn from so few cases they are: (1) When it can be given early in cases of blackleg, before crepitant swellings appear, penicillin may prove useful in the treatment of this disease and (2) after large crepitant swellings have developed, the expense of penicillin therapy is not justified.

MANFRED PARKER

Kingfisher, Okla.

Clinical Note on Treatment of Cow Pox

October 13, 1945, we were called to inspect a herd of 28 dairy cows. The entire herd was suffering from cow pox which had evidently been present for some time as there were cows with lesions characteristic of each of the four stages, i.e., papular, vesicular, pustular and scab formation. This epidemic was of sporadic nature and could not be traced to any definite origin. While this herd was under treatment, we found only one other case of cow pox within a radius of more than 50 miles.

For the most part, the disease was of the mild type with discrete lesions limited to the teats, although in about one-third of the cows, the disease had extended some distance along the surface of the udder. A number of the older cases had already developed a mastitis with induration and gargety milk in several quarters. The induration was seen most commonly, in those cows having lesions at, or in very close proximity to, the teat opening.

All cows were treated with cerbinol ointment (20%) which was applied freely on and about the affected areas. Treatment was applied twice daily and many vesicles were observed to dry up completely following a single treatment. Scabs softened and fell off in one or two days and in those cases where moist denuded bleeding surfaces and fissures were present, the healing action of cerbinol was immediately apparent. No secondary infections occurred in any animals and the induration of the teats disappeared following one or two massages with the ointment. The entire herd was restored to normal milk production within a single week—many within five days.

No recurrences have been observed in the herd and no other cases have been reported in the vicinity since this outbreak. We believe that cerbinol ointment is one of the most efficient and satisfactory preparations for the treatment of cow pox that we have ever used.

LEONARD R. HAUBRICH
JAMES C. DEWITT

Claremont, New Hampshire

A New Colloidal Iodine for Therapeutic Use

Probably few of our simpler eye conditions are so often treated poorly, as is conjunctivitis. The same can be said for disease of the nasal region and of the ear, particularly, canker.

Numerous members of the public, the veterinary profession and the pharmaceutical industry fail to comprehend that the intelligent use of liquid, mucous membrane medicaments cannot afford a compromise with promiscuity and overindulgence. While occasionally certain types of mucous membrane medicaments produce side-effects in the animal patient, the distressing sequels more often can be attributed directly to individuals who abuse and misuse these types of therapy.

Formerly, silver nitrate, zinc sulfate, plus the analgesics constituted the sheet anchor in conjunctiva therapy. The drugs used for rhinological and otological treatment are too numerous to mention.

My objective is to call attention to a simple new colloidal drug for use in these often troublesome and annoying diseases of eye, nose and ear; a drug that is abuse-proof and acceptable on physiologic ground to thoughtful and discriminating veterinarians.

This new preparation is a colloidal iodine and, fully appreciating the responsibility of writing something "new" on the therapeutics of the element iodine, I find myself in the same position as the conscientious scientist, who, in his anxiety to furnish relief from the ravages of a disease, may, at times, fall a victim to the common human error of believing what he wishes to believe; of painting his findings with a rosier tint than the cold light of factual, logical reasoning warrants.

On guard against this human frailty, I have cross-examined the evidence in my clinical research with meticulous care, to be certain that every claim for the complex therapeutic actions of this preparation is sound. To have done less would not have been fair to my colleagues who constantly look to the experience of others for help and guidance.

It seems reasonable to delve briefly into the history of iodine in order to review the wide therapeutic "spread" possible with this one element. On November 29th, 1813, the discovery of iodine by the French chemist, Bernard Courtois, was announced to the world in a paper read before the Imperial Institute of France. In a century and a quarter the element has found its way into a countless variety of uses and iodine has become a first aid remedy in every quarter of the globe. In the hands of the physician and surgeon it serves the rigid antiseptic and curative technic of medical science. On the farms, the breeder uses it in feed-stuffs, and the veterinarian uses it to improve and preserve animal health. In the factory, iodine enters into the manufacture of numerous quite unrelated products ranging from dye-stuffs and disinfectants to photographic film and polaroid glass.

The use of iodine in treatment of some diseases as well as in animal feeding has been long and generally known to the veterinary profession. However, there are also a considerable number of therapeutic applications which have not received such general publicity. Recent years have brought to light evidence of new uses for iodine as well as repeated reports of continued success of already well-known iodine therapy.

Many disadvantages are experienced in the use of elemental iodine and because of these it is desirable to bring to the attention of veterinarians the indications for a new form of colloidal iodine therapy, based on a clincial background of several years of well-planned research by a large number of investigators in the field of iodine therapy in both human medicine and veterinary medicine.

This colloidal type of iodine has the therapeutic and physiological effects of elemental iodine without the caustic, irritating, toxic and system depressing effects of the latter. It is capable of being administered topically enterally, intramuscularly and intravenously, in doses adapted to give a maximum desired therapeutic reaction without the skin eruption and other unfavorable characteristics of iodine toxicosis or iodism. This colloidal form of iodine is stable, isotonic, non-toxic and has a pH of 7. It is negatively charged, and capable of making a homogenous solution with blood and all other fluids of the animal body.

My clinical research work has included ear canker, conjunctivitis, rhinitis and dermatitis. In all, sixty-six dogs were treated* with excellent results. A breakdown of the specific results are as follows:

Ear Canker (all types) in dogs:

1. Number of cases treated, 20.
2. Duration of treatment, one week to 10 days.
3. Colloidal iodine liquid was applied once or twice a day—5 to 10 drops or sufficient to fill the external auditory canal.

Conjunctivitis (all types—specific and non-specific) in dogs:

1. Number of cases treated, 15.
2. Duration of treatment, five to seven days.

*Colloidal iodine used in the treatment of these cases was supplied through the courtesy of the Neodyne Company of Chicago. Commercially the preparation used is known as "Neodyne."

3. The eyes were flooded twice a day with colloidal iodine liquid.

Corneal Ulcers in dogs:

1. Number of cases treated, four.

2. Duration of treatment, 10 days to two weeks.

3. The eyes were flooded twice a day with colloidal iodine liquid.

Rhinitis (all types) in dogs:

1. Number of cases treated, 25.

2. Duration of treatment, five to seven days.

3. One-half medicine dropper (10 to 15 drops) of colloidal iodine liquid were instilled in each nostril once a day.

Non-specific dermatitis in dogs:

1. Number of cases treated, two.

2. Duration of treatment, one week.

3. Colloidal iodine liquid or jelly was applied once a day.

The cleanliness of colloidal iodine use is appreciated by veterinarians, as it is free from the highly staining characteristics of most natural iodine preparations. The blue tint caused by the preparation is water soluble and washes off easily.

C. L. MILLER

Oak Park, Ill.

"Fatal Calk Wound in a Horse"

A black gelding, seven years of age, and weighing 1500 pounds, was kicked during the night by his team-mate on anterior surface of the left hind leg, a short distance below the stifle. The farm manager noticed the condition the following morning at feeding time. As the wound seemed fairly clean and there appeared to be but little destruction of tissue, a local antiseptic wash was used for several days. In time, the horse began to show marked lameness and some stiffness with swelling of the parts. A veterinarian was called, and the question of a fracture was considered, but no definite diagnosis was made. It seemed advisable to place the horse in a sling. This was done, but the horse would thrash and get out of the sling and would fall to the stall floor, which made matters worse.

There was noted each day, a greater amount of swelling which extended upward from the wound and the region about the leg and sheath was greatly enlarged. There was marked tenderness and heat throughout this region. The horse seemed to be in much pain, which was increased by motion, and finally could not bear any weight on that quarter.

The case did not improve, and after several days, the veterinarian was called again. At this time, an unfavorable prognosis was given, and it seemed advisable to dispatch the animal. A necropsy was performed which showed a healing wound, with no pus present. But the tissues about the wound revealed a great amount of bruising. A space under the wound and extending upward for several inches was filled with a brownish-red odorless fluid. The muscles of the leg were pulled away from their attachments. There was no sign of gas in the tissues, and no bone fracture was found.

What was the pathology and its etiology?

P. A. KIMBALL, M. D.

Union, N. H.

Growth Hormone in Rickets of a Dog

At the time a seven-month-old, Borzoi bitch was examined, May 19, 1945, definite symptoms of rickets were present, with beaded ribs, rough coat, emaciation and arrested growth.

Trainers had refused to handle this dog for showing because of this condition. As a result the dog had been under treatment with no apparent improvement. Vitamin D, calcium and phosphorous supplements, plus other mineral and vitamin preparations had been used, along with a good diet—all to no avail.

X-ray photographs of the phalanges and olecranon indicated incomplete closure of the epiphyses. This along with the arrested growth seemed to indicate a hypopituitary dwarfism. Therefore it was decided to use antuitrin G (growth hormone), plus a mineral supplement and a good diet in an attempt to bring about normal development of the dog.

An injection of 2cc (20 units) of antuitrin G was made May 20, and additional injections of 1cc (10 units) every three days.

On June 14, 1945, X-ray pictures of the same bones indicated advanced closure of the epiphyses, consequently the injections were discontinued. July 1st the dog had grown ¾-inch in height, the chest had deepened over three inches, and the rib-beading had practically disappeared.

The most interesting feature about this case is that the dog has been shown recently in three dog shows, and has won first place against all comers, thus accumulating several points toward a championship.

Due to the excellent results obtained in this case of apparent rickets, or hypopituitary dwarfism, this report is made as a suggestion for the treatment of apparently rickety animals, where the usual therapy fails.

A. A. DAVIES

Linden, Mo.

Abstracts

How Prevalent Is Undulant Fever

Benning[16] takes a gloomy view of the undulant fever problem in the United States. He thinks that a very large number of persons have a sub-clinical infection which, if untreated, will continue throughout their lives always with the possibility of flaring up on occasion into a serious clinical disease. His belief is based upon the skin test of some thousands of school children in which 9% reacted positively. He regards unpasteurized milk as being the chief source of the infection and computes that more than 57 million persons are continuously or intermittently exposed to this infection.

"Pasteurization of every drop of milk produced today would effectually reduce to a minimum tomorrow's new cases of brucellosis in all but the few occupations concerned with the handling of infected animals. However, if such forward steps could be taken to protect the general population now, it would scarcely affect the thousands of persons who drank raw milk several years ago.

* * * *

Method for the Control of Trichinosis

The author[10] knows a great deal about trichinosis but next to nothing about swine—the chief source of human trichinosis, consequently, his discussion is in the main highly informative but the method he proposes for the suppression of the disease in swine is quite impractical and takes no account of methods that have been conspicuously successful in other countries.

It is computed that, in 1944, 96,849,000 hogs were slaughtered in this country, the total production of pork was 12,893,000,000 pounds or 30 billion individual servings or 200 servings per person. Since the incidence of trichinosis in swine is 1.5% three of these 200 servings are animals infected with Trichinella. Therefore in 66 years the average person in the United States consumes 200 servings of pork containing Trichinella.

Various surveys including a large number of necropsies show that 16% of the adults in this country have at some time in their lives suffered a trichinosis infection. That the incidence is not far higher is explained by the fact that most pork is cooked before it is eaten and portions of pork commonly consumed raw or inadequately cooked are processed to kill the parasites in the 70% of swine that are slaughtered in federally inspected plants.

It is the author's view that the majority of cases of human trichinosis is subclinical but that many cases of enteritis are unrecognized trichinosis. He thinks that few cases of trichinosis not severe enough to be hospitalized are recognized. The known mortality of trichinosis in man is considerable and Gould agrees with the statement of Maurice C. Hall that "the United States has the greatest problem of trichinosis of any country in the world."

It is stated "It is now generally recognized that man acquires trichinosis primarily from eating trichinous pork and that the hog becomes infected primarily from eating scraps of uncooked trichinous pork present in uncooked garbage." This statement of course is not questioned by any informed person, but the author then proceeds to draw from it the amazing conclusion that if the feeding of raw garbage was stopped we should still have to contend with the 0.9% of trichinosis present in grain fed hogs! Apparently he is unaware that grain fed hogs, like garbage fed hogs, acquire trichinosis from trichinous pork scraps from garbage fed hogs which reach them mainly in kitchen refuse. Thus on fallacious reasoning Gould concludes that prohibiting the feeding of raw garbage to hogs would not solve the human trichinosis problem. He reaches this conclusion in defiance of statistics he himself quotes from countries in which feeding raw garbage to hogs is not tolerated, e.g., in Poland the incidence of trichinosis in swine is 0.05; in Germany 0.001; in Denmark 0.00075; or one-thirtieth, one fifteen-hundredth and one two-thousandth, respectively, of the incidence in this country.

The author's method of control contemplates continuing to infect swine at the source of trichinous infection, the garbage feeding plant and then process all pork, not just the portions commonly eaten raw or under-cooked by people of certain nationalities. All that would be required to carry out this method would be (1) slaughter all swine in the great packing plants having federal inspection, (2) build enormous freezers at each plant capable of storing 20 days' kill, (3) employ 10,000 inspectors, or maybe it would take 100,000, to prevent slaughter of swine on farms, in slaughter houses down on the creek, in locker plants and other unauthorized places.

The author is a recognized expert on the subject of trichinosis. He is genuinely interested in suppressing it in man, but he does his cause no good by offering chimerical substitutes for the only plan that has been suc-

[16] Benning, Henry M. Chronic brucellosis: Success of treatment with brucellin. *J. Am. Med. Assn.*, 130:6, pp. 320-324. 1946.

[10] Gould, S. E. An effective method for the control of Trichinosis in the United States. *J. Am. Med. Assn.*, 129:18. 1945.

cessful. It should be remembered that only 6% of swine are garbage fed. The profits of that small fraction of the swine industry are not so sacred as to justify endangering the public health and bringing a certain amount of discredit upon the product of the other 94% of the industry.

However, electric refrigerators in the home are making the feeding of city garbage unprofitable and when they are more universally distributed may go far to simplify the trichinosis problem. At a normal price for hogs it is doubtful, even now, if garbage from other than hotels, restaurants, hospitals and other public institutions can be fed to hogs profitably. By preventing food spoilage that formerly occurred the electric refrigerator has reduced the quality of the garbage from city homes to a degree that only an abnormally high price for hogs can make its use economical. When garbage for feeding is restricted to comparatively few sources the regulation of the garbage feeding industry will be much simplified.

Bactericidal Activity of Bovine Serum for Br. Abortus

A recent experiment[13] at the Wisconsin Experiment Station supplies a valuable complement[14] to an earlier experiment at the same station and to one conducted by Huddleston.[15]

In the earlier experiment at the Wisconsin station it was shown bactericidal antibodies of high titer are present in the sera of cattle that have recovered from induced infection of *Br. abortus* and whose serum no longer reacts positively to the agglutination test—("ceased" reactors).

Huddleston showed that by means of the bactericidal activity of their sera, vaccinated cattle and those that have recovered from Brucella infection can be distinguished from infected animals even though all three react positively to the agglutination test. *(Vet. Med.,* 40:6, p. 211. (June) 1945.)

In the present experiment 15 cows varying in age from a minimum of 18 months were vaccinated with 5cc of strain 19 vaccine. All had been bred from one to three months prior to vaccination. Serum tests were made 18 months after vaccination. At that time all animals had ceased to react to the agglutination except for slight or partial reaction at 1:50 or 1:100 save one that gave a slight reaction at 1:200.

The sera of these animals and of normal animals (controls) were tested for bactericidal action against a virulent strain of Brucella organisms and also against strain 19.

The following is the authors' summary of the findings in this research:

The bactericidal action of the serum from both normal and vaccinated cattle has been shown to depend on the combined activity of antibody and complement.

The serum of normal animals usually has an appreciable bactericidal activity at dilutions of 1:40 or 1:80, that of some individuals at 1:16, rarely higher. The serum of animals vaccinated as adults, or nearly so, showed a definite antibacterial activity to *Brucella abortus* at dilutions of 1:1,280 and even at 1:10,240 in some individuals. The serum of these individuals showed partial agglutinating reactions no higher than 1:100, but with that from one cow at 1:200.

In the majority of the tests, undiluted or diluted serum destroyed more organisms of strain 19 than of the more virulent strain.

These tests show that even in the almost complete absence of agglutinating antibodies the serum of a vaccinated animal may exert antibacterial activity against *Br. abortus* greater than that of the serum of normal animals. These results substantiate a previous report on a parallel finding in the serum of animals once infected, but with a titer of agglutinating antibodies no higher than in normal cattle.

Veterinary Vital Statistics Long Sought

In April, 1881, nearly 65 years ago, Dr. F. S. Billings[5] stated:

"It is well known that there is a just need of reliable statistics, with reference to the prevalence of contagious diseases among the animals of this country, as well as of the causes which exist in them dangerous to the public health. We wish to personally advance these questions, and hereby appeal to all colleagues, regular and irregular, to all men who have an interest in the well-being of our profession, to take note of these things, and report to us every case which comes to their knowledge, it matters not of what kind, whether rabies, glanders or pleuropneumonia. Especially do we desire to gain some knowledge about tuberculosis among our cattle and trichina among our swine. In this regard we would beg of our colleagues to revise *(sic)*

[13] Huddleston, I. Forrest; Wood, Evelyn, and Cressman, Audrey. The differential diagnosis of bovine brucellosis from the bactericidal action of blood plasma. *Sci.*, 101:2623, p. 358. 1945.

[14] Irwin, M. R., and Beach, B. A. Differential bactericidal activity of bovine serum toward strains of *Br. abortus* of high and low virulence. *J. Agr. Res.*, 72:2, pp. 89-91. 1946.

[15] Beach, B. A.; Irwin, M. R., and Ferguson, L. C. The significance of the "ceased" reactor to brucellosis. *J. Agr. Res.*, 61, pp. 75-80. 1940.

[5] *Am. Vet. Rev.*, 5:1, p. 11.

their dairies and farms, and report to us where tuberculosis is found, and the number of cattle on such farms or in such dairies. Causes leading to the extension of the disease, such as heredity influences, the breathing of infected air from adjoining cattle having the disease, is an open question of no secondary value both to the profession and to cattle growers. We do not know that an authentic case of anthrax has ever been recorded in this country; but if colleagues would kindly send us the blood sun-dried upon glass slides, of any suspicious cases we would be much obliged.

"As to trichinosis among our swine, we should like the stumps of pillars of the diaphragm from the largest number of hogs possible, from all parts of the country during the coming year. They can be packed in 5% solution of carbolic acid, in preserve jars, and thus collected and sent to us per express C.O.D., 155 Tremont St., Boston.

"If we have this professional assistance, we promise to make a valuable report of the result thus attained, at the end of the year in the *Review*."

Penicillin in Treatment of Mastitis

Ten commercial herds near Melbourne were used;[17] the largest 200 and the smallest 30 cows, with eight herds milked by machine and two milked by hand.

In milk flow for 24 hours following penicillin udder infusion. In one case only was there obtained swelling of the udder and the production of abnormal milk.

Ninety-five cases of clinical and 39 cases of subclinical mastitis caused by streptococci and staphylococci were treated with penicillin.

Clinical cases due to *Streptococcus agalactiae* responded in from one to five daily treatments:

Infection was eliminated in a single dose from 9 of 24 quarters = 37%.

Infection was eliminated in two doses from 41 of 37 quarters = 72%.

Infection was eliminated in four doses from 2 of 3 quarters = 66%.

Infection was eliminated in five doses from 2 of 2 quarters = 100%.

Clinical cases due to staphylococci did not respond so well. The author stresses the importance of sanitary measures with treatment.

Tables 1 and 2 give details of this experiment.—*C. S. B.*

New Mink Mite

Garlick[6] describes a mite, apparently of the Sarcoptes genus that he has been unable to find mentioned in the literature. It infests the tail and hindquarters of mink and, in addition to causing untolerable itching, damages the fur. It is active only from mid-August to the latter days of December; being dormant apparently the remainder of the year. Dipping is an effective control measure.

TABLE 1. PENICILLIN LEVELS IN MILK AT FOUR-HOUR INTERVALS AFTER ADMINISTRATION TO COWS IN VARIOUS STAGES OF LACTATION. (THESE ARE MEAN RESULTS OF SEVERAL ANIMALS.)

Stages of lactation	Penicillin concentration			
	Administered	After 4 hrs.	After 8 hrs.	After 12 hrs.
Early—full flow of milk	15,000 units in 100cc	40 units per cc	4 units per cc	0.6 units per cc
Middle—moderate flow of milk	" " " "	42 " "	16 " "	4 " "
Late—drying off	" " " "	81 " "	33 " "	21 " "
Dry	" " " "	81 " "	66 " "	40 " "

TABLE 2. ABSORPTION OF PENICILLIN FROM THE UDDER IN RELATION TO THE TIME OF ADMINISTRATION.

Cow, quarter and stage of lactation	Penicillin				Final concentration in milk at 12 hrs.
	Administered	Absorbed at			
	Units	4 hrs.	8 hrs.	12 hrs.	
12 D, RF, middle of lactation	15,000	7,700 = 51%	13,614 = 91%	14,251 = 95%	1.2 units per cc
11 RF, middle of lactation	15,000	11,400 = 76%	12,200 = 81%	14,555 = 97%	5 " "
14 LF, drying off	15,000	6,000 = 44%	8,838 = 59%	10,240 = 68%	40 " "
14 LH, drying off	15,000	3,420 = 45%	3,930 = 52%	5,239 = 70%	30 " "

From the assay per cc and volume of milk was calculated the amount of penicillin in the quarter at the time of sampling. Subtracting this from the amount infused gives the amount absorbed or otherwise lost by the quarter.

In normal cows there was a 13 to 37% drop

[17] Murnane, D. A preliminary report on the treatment of clinical and subclinical Streptococcus and Staphylococcus infections of the bovine udder with penicillin. *Australian Vet. J.*, 24:4, pp. 82-90. 1945.

[6] Garlick, Norman L., in *Am. Fur Rancher*, Nov., 1945.

Effectiveness of Phenothiazine in Range Sheep

That phenothiazine possesses a high efficiency against *Haemonchus contortus* and *Oesophagostomum columbianum* where the ewes are treated just before going on pasture and both ewes and lambs are kept on a phenothiazine-salt mixture throughout the summer, may be said to be established. The efficiency of this parasiticide against Ostertagia, Nemotodirus and Trichostrongylus species is less well established.

Haemonchus and Oesophagostomum are not important parasites of sheep on the plains of eastern Montana, but heavy infestations of trichostrongyles, Nematodirus and Monezia occur in that area. In this district diarrhea in lambs, at the age of three to four months, is common and has been attributed to infestation by one or another or perhaps all of these parasites.

Beginning in January, 1944, the authors[27] conducted an experiment at the Montana agricultural experiment station at Bozeman to determine the usefulness of phenothiazine in the control of parasites of range sheep in this section. One hundred ten ewes were divided into two similar lots. Phenothiazine was administered to lot 1, Jan. 18, March 31 and just before the ewes went on pasture—May 3 to June 19. Lot 2 was not treated during the winter nor before going on pasture in the spring and early summer.

The authors conclude:

1. Winter treatment of ewes not clinically affected is not worthwhile, since such treatments failed to lower the parasite load. The treated ewes were as heavily infested in May as were the controls.

2. The 10% phenothiazine-salt mixture equalized the egg counts made Aug. 7 of the two lots of ewes. As a result of treatment at the time of going on pasture the egg counts of treated ewes averaged 10 per gram and of untreated ewes 590 per gram of feces.

3. The parasitic load of the lambs of both lots remained essentially the same throughout the season and Aug. 7 averaged 125 per gram of feces. Since lambs on the same pastures the preceding summer had an egg count of 1300 per gram Aug. 7, 1943, the authors conclude that phenothiazine-salt mixture will prevent clinical nematode parasitisms in lambs.

4. The phenothiazine-salt mixture apparently failed to inhibit the development of Nematodirus larvae in the feces.

5. The average weight of the lambs, Oct. 9, was 72.6 pounds. Lambs from the same ewes run on the same pastures the preceding season was 63 pounds. The authors credit the 9.6 pounds greater gain made by the lambs in 1944 to the effect of the phenothiazine-salt mixture in holding down the worm infestation.

One is inclined to question the second conclusion since (1) there were no controls (2) during the winter when the load of treated and untreated sheep was equalized without the phenothiazine-salt mixture and (3) it did not prevent a rapid increase in the infestation during April and May.

The doubt also applies to the third conclusion. There were no controls in this experiment and comparison with lambs of the preceding season must remain inclusive since there are various factors other than the parasiticide that may have influenced the result. The great effect that the state of nutrition has on parasitism could easily have accounted for the difference in the egg counts.

Conclusion 5 is open to the same question as the third conclusion. The lesser parasite load in 1944 might as readily been due to the greater gain of the lambs in that season as the lesser gain in the preceding season have been due to the greater parasite load; i.e., better pasturage in 1944, a factor not easily measured with precision, could have accounted for the better gain and milder parasitism of that season just as certainly as the parasiticide administered during that season.

This is not to say, or infer, the conclusions drawn from the experiment are not valid. They probably are correct. It is only to observe the record does not conclusively prove them and it is worth remembering that some of the early conclusions as to the efficacy of phenothiazine have had to be revised as a result of subsequent experience.

[27] Seghetti, Lee, and Marsh, Hadleigh. Control of intestinal parasitisms in lambs by winter treatment of ewes as compared with the use of phenothiazine in salt in summer. *Am. J. Vet. Res.*, 6:20, pp. 59-164. 1945

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Facultad de Medicinia Veterinaria Annuario, 1944. This annual report of the school of veterinary medicine contains comprehensive discussions of anesthesia, photosensitization and tumors in the horse. Universidad Nacional de la Plata, Buenos Aires, Argentine.

Epizootologia de la Brucellosis en el Uruguay.—A discussion of the incidence cost, control and public health aspects of bovine and swine brucellosis in Uruguay, from the animal biological laboratory. Laboratoria de Biologia Animal, Camino Maldonado Klm. 29, Montevideo.

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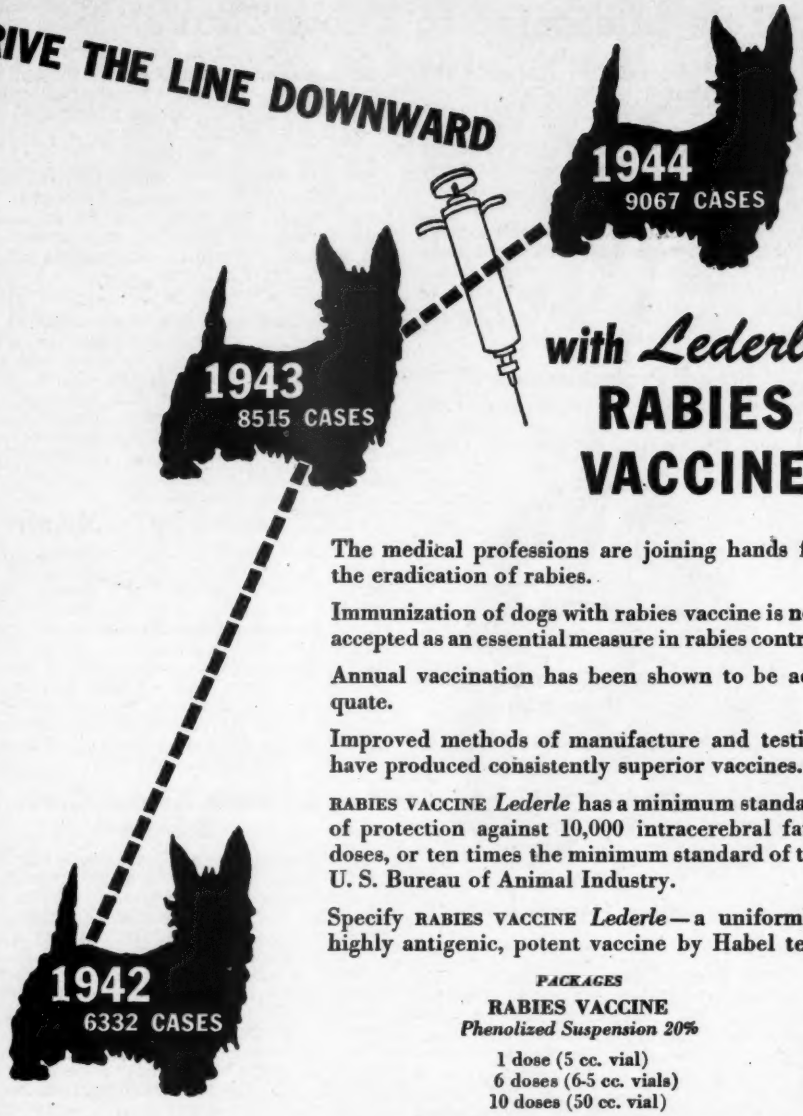

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On account of the probable greater use of frozen meats, the National Livestock and Meat Board is supporting research at Iowa State College. The studies include the best ways to defrost and to cook frozen meats.

■

Breed Preference

The breed preferences of 524 visitors to the Gaines Dog Research Center were: cocker spaniel, 106; Irish setter, 70; collie, 38; wire

Most visitors expressed a breed preference

fox terrier, 31; great Dane, 29; boxer, 27; Scottie, 25; English setter, 24; pointer, 17; German shepherd, 15; sealyham, 13; poodles, 13; Dalmatian, 12; dachshund, 10. The preferences of the remaining 94 visitors were scattered among many other breeds; none however being the choice of as many as 10 of the visitors. More than 100 dogs representing 18 breeds are on view at the research kennels.

■

Dr. E. C. Phipps, OSU '34, was named City Health Commissioner of Fostoria, Ohio, when the city board of health met early in March. Doctor Phipps served in the Army four years and was separated from the service in January, 1946. In addition to duties including inspection of food and food handling establishments in Burma, India, the doctor was assigned to take the course given in Chicago by the Army school of meat and dairy hygiene and also the course at the Medical Field Service School at Carlisle Barracks, Pa.

All organisms so far studied are capable of developing a tolerance to the sulfonamide drugs if exposed to concentrations inadequate to inhibit their growth.

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The University of Manitoba, Winnipeg, Canada, gave a fur farming short course January 7-12. It was conducted by R. J. Kirk, veterinarian. Coöperating were members of the animal husbandry department and the Experimental Fur Farm.

■

The medical activities of the Medical Field Service School, Carlisle Barracks, Pa., courses of which were attended by many officers of the Veterinary Corps during World War II have been moved to Fort Sam Houston, Texas. A basic Medical Department officers' course of approximately 1100 newly commissioned officers will be in continuous operation at the Fort.

■

DDT Reports by the Hundred

Scientists say they can not recall any scientific development — not excepting sulfa drugs, penicillin, or even the atomic bomb up to this time—that has resulted in such a sustained flood of factual technical reporting as the discovery and research development of DDT. Whole issues of the Journal of Economic Entomology have been devoted almost exclusively to brief scientific reports of research to determine the effects of DDT on specific pests—or its failure to control.—U.S.D.A.

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How Russians Herded Cattle from Siberia

It has been revealed how Russia transferred 100,000 cattle and 200,000 sheep from districts in Siberia to the Ukraine and White Russia after the Nazis, who caused so much desolation there, had been driven out. By a decree of the Council of People's Commissars, it was decided to move these herds under their own power because for over 600 miles it would have been necessary for Ukrainia alone to procure over 20,000 railroad cars.

All railroad cars were tied up in the war effort, so 15,000 "shepherds" were immediately organized for the job. Veterinarians inspected all herds before departure. Twenty different "tracks" for the cattle to roam were chosen, with veterinary stations and feeding points located every eight or ten miles along the way. Cattle were in motion daily from dawn till sunset, and with fair weather made from eight to twelve miles per day. Cows were milked regularly and the milk used by the shepherds, with surplus going to milk centers along the route.

One shepherd brought in 350 sheep in ten weeks without the loss of a single animal—and the flock had an increase in weight. Another shepherd lost one sheep, but five new ones were born.—*National Provisioner.*